

Nutrient Analysis

P R O T O C O L S

How to Analyze Menus for
USDA's School Meals Programs



Purpose of this Manual

This guidance manual establishes procedures (protocols) to conduct an accurate nutrient analysis. It is developed for:

- School Food Authorities (SFAs) using Nutrient Standard Menu Planning (NSMP) or Assisted Nutrient Standard Menu Planning (ANSMP) who are required to plan reimbursable meals using nutrient analysis.
- SFAs using Food-Based Menu Planning who may conduct an optional nutrient analysis and want the State agency to accept their nutrient analysis for the School Meals Initiative (SMI) Review.
- State agencies, during an SMI Review, who are required to:
 - Conduct a nutrient analysis of one school week's menus for SFAs using a Food-Based Menu Planning option.
 - Review the nutrient analysis process of SFAs using NSMP/ANSMP to ensure nutrient analyses have been conducted according to protocols.
 - Review the nutrient analysis process of SFAs using Food-Based Menu Planning who want the State agency to accept their nutrient analyses, to ensure that the SFA's nutrient analyses have been conducted according to protocols.

Purpose of Nutrient Analysis

The SMI requires that school meals meet the nutrition standards when averaged over a school week. To assist the evaluation process, USDA established nutrient standards, the minimum required nutrient and calorie levels, and maximum fat and saturated fat levels for each age or grade group used in menu planning. To determine calorie and nutrient levels in a specific menu, the menu planner uses a USDA-approved software program to analyze the nutrient composition for the menus and compares these levels with the required nutrient and calorie levels for each age or grade group.

An accurate nutrient analysis is a critical tool:

- To plan and evaluate menus using NSMP or ANSMP.
- To evaluate menus using Food-Based Menu Planning.

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Introduction and Background

The School Meals Initiative

Since 1995, the **School Meals Initiative for Healthy Children (SMI)** has helped foodservice directors and staff offer healthier school meals, promote nutrition education, and create school nutrition environments that support healthy lifestyle behaviors. SMI underscores national responsibility to ensure that school meals address children's health and nutrition needs. It establishes a framework to plan and evaluate school meals using **nutrition standards**, the nutritional requirements based on Recommended Dietary Allowances (RDAs), appropriate calorie levels, and goals outlined in the *Dietary Guidelines for Americans*.

USDA School Meals Initiative for Healthy Children Nutrition Standards

- **Recommended Dietary Allowances (RDA)**
 - 1/4 RDA for appropriate age/grade group for breakfast for *protein, calcium, iron, vitamins A and C*
 - 1/3 RDA for appropriate age/grade group for lunch for *protein, calcium, iron, vitamins A and C*
- **Recommended Energy Allowances (calories)**
 - Appropriate for age/grade group
- **Dietary Guidelines for Americans^{1,2}**
 - Eat a variety of foods
 - Limit *total fat* to $\leq 30\%$ of calories
 - Limit *saturated fat* to $< 10\%$ of calories
 - Choose a diet low in *cholesterol*
 - Choose a diet with plenty of grain products, vegetables, and fruits
 - Choose a diet moderate in salt and sodium

¹ The *Dietary Guidelines* recommends that after 2 years of age, children should gradually adopt a diet that, by about 5 years of age, contains no more than 30 percent of calories from fat.

² Refer to 7 CFR 210 and 220 to determine version of *Dietary Guidelines* used in the regulations.

Menu Planning Approaches—A Review

Schools can choose from five menu planning options to plan and offer meals that meet the nutrition standards.

Two food-based approaches:

- **Traditional Food-Based Menu Planning**, and
- **Enhanced Food-Based Menu Planning**.

Schools using food-based approaches may choose to analyze menus to determine compliance with nutrient standards; however, they are not required to do so. The State agency will conduct a nutrient analysis of the selected school during the SMI review.

Two nutrient-based approaches:

- **Nutrient Standard Menu Planning (NSMP)** and
- **Assisted Nutrient Standard Menu Planning (ANSMP)**.

Schools using NSMP or ANSMP must conduct nutrient analyses to plan school meals that meet the nutrition standards for the appropriate age/grade group.

The fifth menu planning approach is called:

- **Alternate Menu Planning**, also known as “Any Reasonable Approach.”

Within the guidelines established for developing alternate menu planning approaches, School Food Authorities (SFA) or State agencies (SA) may modify one of the established menu planning approaches, or they may develop their own menu planning approach. The alternate menu planning approach must be available in writing for review and monitoring purposes.

Guidance on the menu planning approaches is available in *A Menu Planner for Healthy School Meals* and *The Road to SMI Success: A Guide for Local School Foodservice Directors*.

Chapter 1

Nutrient Standards

CHAPTER OBJECTIVES

After reading this chapter, you will understand how to:

- Explain USDA's SMI nutrient standards.
- Describe nutrient standards for food-based and nutrient-based menu planning options.
- List exceptions and modifications on age/grade grouping.

What is a Nutrient Standard?

While the nutrition standards include all of the nutrition goals for school meals, a ***nutrient standard*** is the required levels of calories and key nutrients *for a specific grade or age group* for breakfast or lunch.

Note: Nutrient standards have not been established for infants and children younger than age 2 because the Dietary Guidelines do not apply to children under 2 years of age.

Calories and Nutrients in the Nutrient Standards

Minimum levels for

- Calories
- Protein
- Calcium
- Iron
- Vitamin A
- Vitamin C

Maximum levels for

- Percentage of calories from total fat ($\leq 30\%$)
- Percentage of calories from saturated fat ($< 10\%$)

NSLP Regulations require that breakfast and/or lunch menus, when averaged over a school week, meet the nutrient standards for the appropriate age or grade group. *Meeting these standards is the goal for all menu-planning options.*

NOTE

Nutrient standards are the minimum levels of nutrient and caloric levels as indicated in the charts in the next few pages

Other Important Nutrients and Dietary Components Analyzed During Nutrient Analysis

- Cholesterol
- Dietary fiber
- Sodium
- Carbohydrate

While the nutrient standards do not specify required levels for cholesterol, sodium, carbohydrate, and dietary fiber, these nutrients are included in the analysis. High dietary intake of

cholesterol and salt or sodium has been associated with hypertension and development of coronary heart disease, in some individuals. While no target levels have been established in the *Dietary Guidelines* for these dietary components, the SMI goal is to reduce the amount of cholesterol and sodium in school meals and increase the amount of dietary fiber over time.

The menu planner and State agency staff evaluate these nutrients to make sure cholesterol and sodium levels are *decreasing*, and dietary fiber levels are *increasing* over time. During an SMI review, State staff will compare results from the previous review with current levels. While some State agencies have established State targets for these dietary components, they are not required or encouraged to do so. The *Dietary Guidelines* do not set target levels for these components. The goal is to monitor improvement over time for the levels of cholesterol, sodium, and fiber in school meals.

Although there is no quantitative level of carbohydrate established for school meals, carbohydrate is important to a healthy diet. The *Dietary Guidelines* emphasize that plant foods such as grains and fruits and vegetables be the foundation of the diet, which is why these foods are at the base of the Food Guide Pyramid. Grain products and fruits and vegetables are low in fat and high in dietary fiber. Offering a variety of grains (especially whole grains), fruits, and vegetables is the basis of healthy eating, accompanied by a moderate amount of low-fat foods from the milk and meat and beans group.

NOTE

The *Dietary Guidelines* do not set targets for cholesterol, sodium and fiber. However, several national health organizations and/or Federal agencies have established recommended levels for cholesterol and sodium, and dietary fiber. For comparison, menu planners and State agency staff may want to review Appendix A for these reference values.

Which Nutrient Standards Should You Use?

Know which menu planning approach you are using.

- Traditional or Enhanced approach – The SFA/school must use the nutrient standards for the *established grade groups* used in planning meals for the SFA/school. There is an

approved modification for nutrient standards available under certain conditions for SFAs/schools using Traditional Food-Based Menu Planning. Refer to pages 13–17 for more information.

- NSMP or ANSMP — Use:
 - *Established Grade groups*;
 - *Established Age groups* (optional); or,
 - *Customized Age groups* (optional) developed for the age groups in your SFA/school.

How Are the Nutrient Standards Derived?

The nutrient standards for each specific age or grade group are calculated by:

1. Adding together the daily requirements for calories and each nutrient, for each age and gender within the age/grade group;
2. Averaging these daily calories and nutrients; and
3. Dividing each average by 3 for lunch and 4 for breakfast.

NOTE

Because of the averaging process, the broader the range of each age/grade group used, the more likely the menus will not meet the needs of the older children and may provide too many calories for the younger children.

Special Caloric Needs

The greatest differential in caloric needs occurs between ages 10-11, or between grades 5-6. A one-year age difference does not make a great difference in the RDA requirements for each nutrient when weighted for the predominant group. However, when several ages are added in on either side of the 10-11 age break, either too few nutrients and calories will be provided for those children ages 11 and above or too many calories and nutrients will be provided for children 10 years and under.

Nutrient Standards: Food-Based Menu Planning

For Food-Based Menu Planning, the nutrient standards are designed to reflect the differing nutrient and calorie needs of younger and older children while also accommodating the grade structure of the majority of schools.

Traditional Meal Pattern: Lunch

Required Grade Groups

- Preschool
- Grades K-3
- Grades 4-12
- Optional Grades 7-12

Minimum Nutrient and Calorie Levels for School Lunches Traditional Menu Planning Approach (School Week Averages)				
Nutrient and Energy Allowances	Preschool	Grades K-3	Grades 4-12	Optional Grades 7-12
Energy Allowances (calories)	517	633	785	825
Total fat	¹	¹	¹	¹
Saturated fat	²	²	²	²
Protein (g)	7	9	15	16
Calcium (mg)	267	267	370	400
Iron (mg)	3.3	3.3	4.2	4.5
Vitamin A (RE)	150	200	285	300
Vitamin C (mg)	14	15	17	18

¹ Total fat not to exceed 30 percent of calories

² Saturated fat to be less than 10 percent of calories

Enhanced Meal Pattern: Lunch

Required Grade Groups

- Preschool
- Grades K-6
- Grades 7-12
- Optional Grades K-3

Minimum Nutrient and Calorie Levels for School Lunches Enhanced Menu Planning Approach (School Week Averages)				
Nutrient and Energy Allowances	Preschool	Grades K-6	Grades 7-12	Optional Grades K-3
Energy Allowances (calories)	517	664	825	633
Total fat	¹	¹	¹	¹
Saturated fat	²	²	²	²
Protein (g)	7	10	16	9
Calcium (mg)	267	286	400	267
Iron (mg)	3.3	3.5	4.5	3.3
Vitamin A (RE)	150	224	300	200
Vitamin C (mg)	14	15	18	15

¹ Total fat not to exceed 30 percent of calories

² Saturated fat to be less than 10 percent of calories

Traditional and Enhanced Meal Patterns: Breakfast

Required Grade Groups

- Preschool
- Grades K-12
- Optional Grades 7-12 for Enhanced Food-Based Menu Planning.

Minimum Nutrient and Calorie Levels for School Breakfast Enhanced and Traditional Food-Based Menu Planning Approach (School Week Averages)			
Nutrient and Energy Allowances	Preschool	Grades K-12	Optional Grades 7-12 for Enhanced Meal Pattern
Energy Allowances (calories)	388	554	618
Total fat	¹	¹	¹
Saturated fat	²	²	²
Protein (g)	5	10	12
Calcium (mg)	200	257	300
Iron (mg)	2.5	3.0	3.4
Vitamin A (RE)	113	197	225
Vitamin C (mg)	11	13	14

¹ Total fat not to exceed 30 percent of calories

² Saturated fat to be less than 10 percent of calories

Using the Established Grade Groups

For Food-Based Menu Planning, the nutrient standards have been established for the meal patterns. SFAs may not customize the grade grouping or the nutrient standards when using the Food-Based Menu Planning approach but may use an approved modification to age/grade groupings. USDA-approved modifications for the Traditional and Enhanced Food-Based Menu Planning approaches are included below.

State agencies may establish guidelines for using these modifications and may or may not require prior approval. Check with your State agency before implementation.

Caution: Neither the menu planner nor the State reviewer can customize grade groups or nutrient standards for the grades when using the Food-Based Menu Planning approach.

Menus must be analyzed according to the grade group(s) used by the SFA for menu planning—not by the grades in the review school.

Modifications Available to Traditional and Enhanced Food-Based Menu Planning

Modification for the Majority of the Children—for Traditional and Enhanced Food-Based Menu Planning

- **If only one age/grade** is outside the established levels of the grade grouping, an SFA may use both the meal pattern portion sizes and the nutrient standards for the *majority of the children*

Example: A school has grades K-4. Only one grade (4th) is outside the established grade group of Grades K-3. Since the majority of the children are in Grades K-3, the school may use the meal pattern portion sizes and nutrient standards for Grades K-3 to plan menus for students in Grades K-4.

- **If more than one age/grade group** is outside the established levels of the grade grouping, a SFA must use two meal patterns and nutrient standards. However, the school always has the option of serving Group IV (Grades 4-12) for all students in the school under the Traditional Menu Planning approach. Although the regulations allow this, from a nutritional perspective, it is not advised. The broader

the range of age/grade groups, the more likely younger children will receive more calories than needed and older children will receive insufficient calories and nutrients.

Modification for Portion Sizes and Nutrient Levels—for Traditional Food-Based Menu Planning

Schools using the Traditional Food-Based Menu Planning approach may:

1. Use the portion sizes for the meal pattern for Grades 4-12 for children in Grades K-6, and follow the nutrient standards for children in Grades K-6.
2. Use the portion sizes for the meal pattern for Grades 4-12 for children in Grades 7-12, and follow the nutrient standards for children in Grades 7-12.

Nutrient Standards: NSMP and ANSMP

For NSMP and ANSMP, the menu planner, at a minimum, must use established nutrient standards for grade groupings. However, the menu planner may use the established optional age levels or may customize the age groups to fit the grade groupings of the school district/school. The menu planner must use more than one group for a K-12 building, so the planner cannot simply customize one age group for a K-12 school.

NSMP and ANSMP: Lunch

Established Grade Groups

- Preschool
- Grades K-6
- Grades 7-12
- Optional Grades K-3

Minimum Nutrient and Calorie Levels for Established Grade Groups for School Lunches NSMP/ANSMP Approaches (School Week Averages)				
Nutrient and Energy Allowances	Preschool	Grades K-6	Grades 7-12	Optional Grades K-3
Energy Allowances (calories)	517	664	825	633
Total fat	¹	¹	¹	¹
Saturated fat	²	²	²	²
Protein (g)	7	10	16	9
Calcium (mg)	267	286	400	267
Iron (mg)	3.3	3.5	4.5	3.3
Vitamin A (RE)	150	224	300	200
Vitamin C (mg)	14	15	18	15

¹ Total fat not to exceed 30 percent of calories

² Saturated fat to be less than 10 percent of calories

NSMP and ANSMP: Breakfast

Established Grade Groups

- Preschool
- Grades K-12
- Optional Grades 7-12

Minimum Nutrient and Calorie Levels for Established Grade Groups for School Breakfast NSMP/ANSMP Approaches (School Week Averages)			
Nutrient and Energy Allowances	Preschool	Grades K-12	Optional Grades 7-12
Energy Allowances (calories)	388	554	618
Total fat	¹	¹	¹
Saturated fat	²	²	²
Protein (g)	5	10	12
Calcium (mg)	200	257	300
Iron (mg)	2.5	3.0	3.4
Vitamin A (RE)	113	197	225
Vitamin C (mg)	11	13	14

¹ Total fat not to exceed 30 percent of calories

² Saturated fat to be less than 10 percent of calories

NSMP and ANSMP: Lunch

Established Age Groups (Optional)

For NSMP and ANSMP, schools have the option to provide the calorie and nutrient levels for school lunches and breakfasts for age groups as shown below:

- Ages 3-6
- Ages 7-10
- Ages 11-13
- Ages 14 and older

Minimum Nutrient and Calorie Levels for Established Age Groups (optional) for School Lunches NSMP/ANSMP Approaches (School Week Averages)				
Nutrients and Energy Allowances	Ages 3-6	Ages 7-10	Ages 11-13	Ages 14 and older
Energy Allowances (calories)	558	667	783	846
Total fat	¹	¹	¹	¹
Saturated fat	²	²	²	²
RDA for Protein (g)	7.3	9.3	15.0	16.7
RDA for Calcium (mg)	267	267	400	400
RDA for Iron (mg)	3.3	3.3	4.5	4.5
RDA for Vitamin A (RE)	158	233	300	300
RDA for Vitamin C (mg)	14.6	15.0	16.7	19.2

¹ Total fat not to exceed 30 percent of calories

² Saturated fat to be less than 10 percent of calories

NSMP and ANSMP: Breakfast

Established Age Groups (Optional)

- Ages 3-6
- Ages 7-10
- Ages 11-13
- Ages 14 and older

Minimum Nutrient and Calorie Levels for Established
Age Groups (optional) for School Breakfast
NSMP/ANSMP Approaches
(School Week Averages)

Nutrients and Energy Allowances	Ages 3-6	Ages 7-10	Ages 11-13	Ages 14 and older
Energy Allowances (calories)	419	500	588	625
Total fat	¹	¹	¹	¹
Saturated fat	²	²	²	²
RDA for Protein (g)	5.50	7.0	11.25	12.50
RDA for Calcium (mg)	200	200	300	300
RDA for Iron (mg)	2.5	2.5	3.4	3.4
RDA for Vitamin A (RE)	119	175	225	225
RDA for Vitamin C (mg)	11.00	11.25	12.50	14.40

¹ Total fat not to exceed 30 percent of calories

² Saturated fat to be less than 10 percent of calories

NSMP and ANSMP: Lunch and Breakfast

Customized Age Groups (Optional)

The option to customize age groups allows the menu planner to develop menus that are more accurately targeted to the nutritional needs of specific groups of children.

Refer to Appendix B for an age to grade comparison chart.

SFAs/schools can create their own customized age groupings and nutrient standards to match the grade structures of the school(s). The menu planner must use more than one group for a K-12 building, so the planner would not simply customize for the grade groupings to fit the school in this case.

For example, schools within a school district, using NSMP/ANSMP, are divided as follows:

- Preschool and kindergarten (Pre-K to K),
- Elementary (Grades 1-6),
- Junior high school (Grades 7-9), and
- High school (Grades 10-12).

The school district can customize age groups as follows:

- Pre-K to K: Create nutrient standards for ages 3 through 5
- Grades 1-6: Create nutrient standards for ages 6 through 11
- Grades 7-9: Create nutrient standards for ages 12 through 14
- Grades 10-12: Create nutrient standards for ages 15 through 17

Remember, in NSMP/ANSMP, the menu planner must use at least two grade or age groups when planning lunches for students in Grades K-12.

USDA-approved software will calculate the nutrient standards for breakfast and lunch for the customized age groups. By customizing these standards, the menu planner can plan meals to better meet the nutrient needs of students.

Modifications of Nutrient Standards for the Majority of Children – for NSMP/ANSMP

Not all schools' grade structures will match the nutrient standard for the established grade or age groups.

- **If only one age/grade** is outside the established levels, an SFA may use the nutrient standard levels for the majority of children.
- **When more than one grade or age** is outside of the established levels, the menu planner must use two grade or age groups.

Examples:

Grade groupings for Lunch:

- May use **one** grade group to plan meals for:
 - Grades K–4 ➤ May use K–3
 - Grades 6–9 ➤ May use 7–12
- At a minimum, use **two** grade groups to plan meals for:
 - Grades K–8 ➤ Use K–6 and 7–12
 - Grades 5–8 ➤ Use K–6 and 7–12

Chapter 2

Key Nutrient Analysis Concepts

CHAPTER OBJECTIVES

After reading this chapter, you will understand how to:

- Define the Child Nutrition (CN) Database.
- Explain what constitutes a school week for a nutrient analysis.
- Discuss weighted and simple averages
- Summarize the yield factor method used for recipe analysis
- Explain the difference between whole foods and fortified foods.

Overview of the Software Database (including the Child Nutrition (CN) Database)

A critical element in meeting SMI nutrition standards depends on having an accurate nutrient analysis. In cooperation with the USDA's Agricultural Research Service (ARS), FNS developed the CN Database to provide accurate, reliable, and centralized nutrient data for analysis of school meals. All USDA-approved software includes the CN Database.

The **CN Database** contains the nutrient profiles of food items commonly used in SFAs/schools and contains only those nutrients that are monitored by the Child Nutrition Program. The CN Database includes:

- Selected food items from the USDA Nutrient Database for Standard Reference;
- USDA commodity foods;
- Nutrient profiles for USDA quantity recipes for schools;
- Many brand name commercially prepared foods provided by food industry; and
- Yield information from USDA's *Food Buying Guide for Child Nutrition Programs*.

These files are *locked*, which means the information in these files may be accessed and copied, but may not be altered by the local user.

Database requirements for USDA-approved nutrient analysis software programs:

- Software must contain the most current version of the CN Database.

- The software may include brand name food items with nutrient data that has been supplied directly to the software vendors by food industry. The user must be able to differentiate between food industry items in the CN Database and food industry items added by the software developers.
- Foods and recipes added by the software vendor or by the user must have the source designated as “Local.”

All Foods Are Included in the Nutrient Analysis

All food or menu items offered in a reimbursable meal, *including condiments*, are included in the nutrient analysis and count toward meeting the nutrient standards for the meal. However, foods that are considered *Foods of Minimal Nutritional Value* (FMNV) under 7 CFR Parts 210 and 220, Appendices B (i.e., chewing gum, soda water, water ices, and certain candies) are included in the nutrient analysis calculations only if they are used as a garnish in a menu item. For example, even though jelly beans are a food of FMNV, a menu planner would include them in the nutrient analysis if they are used as a cake decoration.

Appendix C provides more information on Foods of Minimal Nutritional Value.

What about foods served to students with special needs?

1. When food or menu item substitutions are made for students with special dietary needs, the meals **are not** included in the nutrient analysis.
2. If food or menu items served to students with special dietary needs are the same menu items served to entire age/grade group, only modified for texture, the food or menu items **are** included in the nutrient analysis.

YIELD FACTOR METHOD

A method for nutrient analysis of recipes that requires that each raw recipe ingredient be converted and entered in the recipe database as ready-to-serve or cooked. If the database does not include raw to cooked yield for a specific ingredient, use the yield data from USDA's *Food Buying Guide for Child Nutrition Programs* to convert from the raw to the cooked form.

Nutrients Calculated “As Consumed” or “Edible Form”

The basis of nutrient analysis for SMI is to calculate the nutrients in the finished food products as they will be consumed by students. It is important to note that recipes for nutrient analysis, including the ingredients used in the recipes, may be very different from the standardized recipe that the cook uses in food production. This is because many of the ingredients in a standardized food production or cook's recipe may be in the “as purchased” form such as raw ground beef, raw chopped onions and raw green pepper for a meatloaf – which will then be prepared or cooked from scratch in the school kitchen(s). The nutrient content of foods may vary greatly depending on the method of preparation. As foods cook, they may lose moisture and nutrients. All ingredients in recipes prepared “from scratch” must be entered into the computer using the Yield Factor Method to account for the changes in nutrient values due to preparation and cooking.

The Yield Factor Method will be explained in more detail during the discussion of the procedures for entering recipes in Chapter 7 .

Nutrients Averaged over the School Week

For SFAs/schools using NSMP and for State agencies monitoring Food-Based Menu Planning, menus will be analyzed over a school week.

Definition of School Week

For the purposes of nutrient analysis, a school week represents a normal school week of five consecutive days. To accommodate weeks that are either shorter or longer than the five consecutive days, the analyzed week should contain a minimum of three consecutive days and a maximum of seven consecutive days. When school lunches are offered less than three times in a week, combine these menus with either the previous week's menus or the subsequent week's menus.

For example, during the week of Thanksgiving, an SFA/school serves lunch only two days that week. Those two days could be combined with either the week before or the week after Thanksgiving. The same situation might arise around other holiday periods or during the first and last weeks of school.

Weighted Averages

National School Lunch Program (NSLP) and School Breakfast Program (SBP) regulations require *weighted averages* for conducting nutrient analyses.¹ A weighted nutrient analysis gives more weight to nutrients in popular foods that are more frequently *selected* by students. Weighted analyses allows for a greater contribution of nutrients to come from menu items that are selected more often and less nutrient contribution from those menu items selected less often. More discussion of weighted averages will be provided in Chapter 8.

Simple Averages

Simple averages is an alternate method for projecting the numbers of each menu or food item, in contrast to weighted averages, which gives more weight to nutrients that are more frequently selected by students. For nutrient analysis, simple averages means giving equal weight to every item offered to the student within each menu choice. More discussion of simple averages will be provided in Chapter 8.

Option to Combine Breakfast and Lunch Analyses

Regulations permit only those SFAs using nutrient-based menu planning approaches and weighted nutrient analysis to combine the breakfast and lunch analyses. State agencies

CAUTION

Combining the nutrient analyses of breakfast and lunch may make it more difficult to identify and target menus that need modification to meet the nutrient standards.

¹ Public Law 108-265 (June 30, 2004) amended section 9 (f)(5) of the Richard B. Russell National School Lunch Act by extending the waiver of the requirement to conduct weighted averages through September 30, 2009.

may not combine breakfast and lunch analyses when evaluating food-based menu planning approaches.

Some USDA-approved software programs have the capability of combining breakfast and lunch analyses. The analysis for breakfast and lunch can be combined *only if weighted averaging is done* for both breakfast and lunch because the combined analysis must be proportionate to the levels of participation in lunch and breakfast.

If the menu planner uses weighted analysis and would like to combine the breakfast and lunch analyses, then software with this capability should be selected. Contact your software representative or review the information at USDA's Web site to determine if a particular software program includes this function.

Whole Foods Versus Fortification

SMI nutrient standards do not include all nutrients for which Recommended Dietary Allowances (RDA) have been established – only protein, calcium, iron, vitamin A, and vitamin C. Menus that include foods that naturally contain sufficient quantities of these nutrients generally contain sufficient levels of other essential nutrients. Thus, monitoring protein, calcium, iron, vitamin A, and vitamin C levels using the nutrient standards should ensure that a child's *overall nutrient needs* are met.

CAUTION

Excessive use of highly fortified foods to meet nutrient targets may result in shortages of some essential nutrients.

USDA cautions that the use of *highly fortified foods* to meet the nutrient standards may result in inadequate levels of other essential nutrients. In addition, research indicates that for optimum health, humans need biologically active compounds (including flavenoids, carotenoids, and other phytonutrients) that occur in whole foods (e.g., fruits, vegetables, and whole grains). This research is still in its early stages and there is much to be learned, but we do know that whole foods

are needed to obtain adequate levels of the full range of essential nutrients.

Therefore, USDA is committed to the dietary guideline that recommends meals be comprised of a **variety** of foods that provide naturally occurring nutrients, rather than formulated foods which have been artificially fortified. Whole foods are necessary to obtain essential nutrients.



Chapter 3

Selecting Software and Hardware for Nutrient Analysis

CHAPTER OBJECTIVES

After reading this chapter, you will understand how to:

- Select software and hardware for nutrient analysis.
- Explain the various functions that USDA-approved software programs allow.
- Choose an approved nutrient analysis program.

USDA-Approved Nutrient Analysis Software Programs

USDA approves software to be used for SMI nutrient analysis to ensure valid and consistent nutrient data.

- SFAs/schools must use USDA-approved software programs to plan menus when using NSMP and ANSMP approaches.
- State agencies must use USDA-approved software to conduct nutrient analyses when monitoring SFAs using Food-Based Menu Planning.
- SFAs/schools using Food-Based Menu Planning options who conduct their own nutrient analysis must use USDA-approved software if they want the State agency to accept their nutrient analysis for the SMI Review.

CN Database in Approved Software

To be eligible for USDA approval, the nutrient analysis software program must contain the current CN Database developed specifically for analysis of school meals. Software manufacturers are expected to update their software within 90 days of the date a new CN database version is released.

NOTE: Although federal regulations do not require SFAs to update nutrient analysis software programs with each CN Database revision, SFAs are encouraged to use software with the most current CN Database version. Each revision contains updated nutrient data and new commercially prepared items, and saves data entry. A list of USDA-approved software is available on the Healthy School Meals Resources for Software Web site: <http://schoolmeals.nal.usda.gov/software/index.html>.

USDA-approved software programs allow you to:

- Enter the nutrient data of a new food item from a Nutrition Facts label or from a manufacturer's nutrient analysis data report.

- Enter, modify and analyze recipes.
- Plan, copy, or modify menus for a 3- to 7-day school week.
- Customize nutrient standards for a specific age grouping (only NSMP/ANSMP may customize age groupings).
- Compare a menu to a specific nutrient standard and indicate when standards are not being met.
- Search the database for food items containing specific nutrients in order to modify menus to meet the nutrient standard.
- Print reports, such as nutrient composition, menus, and recipe analysis.

A more detailed description of the software program requirements and functions is provided in Appendix C.

Choosing an Approved Nutrient Analysis Software Program

Differences in Software Programs

While the USDA-approved software programs must include the functions outlined in Appendix D, there are still many differences between the USDA-approved software programs.

- Some programs perform only nutrient analysis.
- Some programs are part of a larger system that include many other school foodservice software modules, such as Free and Reduced Price modules, Food Production modules, and Inventory modules.
- Operating system and hardware requirements vary.

CAUTION

Some programs will not run on older computer operating systems.

NOTE

USDA only reviews and monitors the CN Database and the software functions that relate directly to nutrient analysis. USDA does not review or approve other functions added by the software vendor.

The SFA/school and State agency will need to do some research to find the program that best meets the needs of your school district/school or State agency. Confer with your computer personnel to ensure software compatibility with existing hardware.

Questions to Consider When Selecting Software

- Do you need software that does only nutrient analysis, or do you want related program applications that perform multi-functions such as procurement, inventory, enhanced production records, etc.?
- Do you want a Windows-based system? A networked system?
- What are the hardware requirements? Will current hardware support the software requirements? Check with your technology support team in the SFA or State agency for guidance.
- Are you able to participate in a demonstration of the software program at a conference or through other means?
- Can you visit a site that is using the software program in which you are interested?
- How easy is the program to use for entering data? Consider who will be using the program and staff computer literacy.
- How efficient is the overall nutrient analysis process? How well does the “search” feature help you locate food items (ingredients) and recipes in the database?
- Are reports easy to understand? Is it easy to interpret the results of the nutrient analysis and modify the recipes and menus to adjust results?

- How often is the software updated? Will the updates be provided as part of your initial cost or be separately priced? What are the update costs?
- Will the analysis be done at each school or centrally by the SFA?
- Is the software capable of combining breakfast and lunch analyses if this is a desired feature?
- What will the software package initially cost for one school/for the district? Consider how many copies or licenses for the software will be needed.
- What support is available? Online, telephone, on site? What does it cost?
- How accessible is the support? Are technicians available when needed?
- Is training available? What does it cost?
- Are there other services available, such as individual school set-up, data entry, recipe entry, menu analysis, etc.?
- Are references provided of other school districts using the software? When you contact references, do they provide positive feedback on services and support?
- Does the company have a trial period during which you can return the software program for a full refund if it does not meet your needs?

A comparison chart of the approved programs with information about the costs, functions, and services related to each program is available on the Healthy School Meals Resources for Software Web site:

<http://schoolmeals.nal.usda.gov/software/index.html>.

Hardware Selection

Use the following guidelines to select hardware.

- Confer with your technology support personnel when selecting hardware.
- Select software first if possible.
- Consult with the software company for recommendations on hardware capabilities and compatibility and efficiency of future software upgrades.
- Identify and discuss all equipment needs, including printers, and hardware technical support availability with the vendor.



Chapter 4

Overview of Conducting a Nutrient Analysis

CHAPTER OBJECTIVES

After reading this chapter, you will understand how to:

- Use the CN Database in conjunction with vendor-added and user-added data.
- List the five steps needed to conduct a nutrient analysis.

KEY

The USDA-approved nutrient analysis software contains foods or ingredients in the CN Database and also allows the user to add, modify, and delete food or ingredient items and recipes in the local database.

The exact steps to conducting a nutrient analysis may vary slightly among software programs, but there are similar functions. Menu planners and State agency staff must understand and follow the procedures or protocols for each step when completing an accurate nutrient analysis, regardless of the software program. There are many principles for menu planners to understand before they can begin the process of conducting a nutrient analysis.

Detailed descriptions of each step will be provided in the following chapters but initially the menu planner must understand several principles or concepts prior to conducting a nutrient analysis.

Before beginning the process of entering new food items into the nutrient analysis software database, the menu planner should understand how the software database has been developed.

Contents of the Nutrient Analysis Software Database

There are two parts to the software database:

1. The Child Nutrition (CN) Database

All USDA-approved nutrient analysis software programs must contain the most current version of the CN Database. All files in the CN Database are *locked* which means they cannot be modified or deleted by the user. The CN Database includes:

- **USDA Standard Reference Foods or Ingredients:** The CN Database contains foods or ingredients most commonly used in school meals from the USDA Nutrient Database for Standard Reference. These foods or ingredients are identified in the software database under the “Source” as “**USDA Nutrient Database.**”

Food categories in the USDA Nutrient Database for Standard Reference file include:

- | | | |
|---------------------------|------------------------------|--------------------------|
| • Baked Goods | • Fats and Oils | • Nuts and Seeds |
| • Beef | • Fish | • Poultry |
| • Beverages | • Fruits/Juices | • Pork |
| • Cereals | • Grains | • Snacks and Sweets |
| • Condiments | • Lamb | • Soups, Sauces, Gravies |
| • Dairy Products and Eggs | • Luncheon Meats and Sausage | • Spices |
| | | • Vegetables |

- **Commercially Prepared Foods:** FNS contracts with a private company to manage the CN Database. Since SFAs/schools use numerous commercially prepared products, manufacturers are encouraged to submit nutritional information for their products so they can be added to the CN Database². This saves data entry time for local school districts/schools and State agencies and makes nutritional information on those products available nationwide. A sample of the form to be completed by manufacturers for submission of data is included in Appendix E. These food products or ingredients are identified in the software database under the “Source” as “**Food Industry**.”
- **USDA Commodities:** The CN Database contains the current USDA commodity foods available to school districts/schools. These food products or ingredients are identified in the software database under the “Source” as “**USDA Commodity**.” The CN Database does not include commodities that are processed under State processing contracts.
- **USDA Food Buying Guide Yield Data:** The CN Database contains yield data from the *Food Buying Guide* as a tool to assist the menu planner in determining raw-to-cooked yields for recipe analysis. It also provides yield data for many other foods from an “as purchased” form (AP) to the edible portion (EP) of the food. This yield data is also useful for volume/weight conversions from the purchase unit, e.g., can size to cups, cups per pound, and cans to weight.

² Companies that want their products entered into the CN Database should visit the Healthy School Meals Resource System website at <http://schoolmeals.nal.usda.gov/Industry/CNdatabase.html>

CAUTION

USDA has not reviewed the USDA recipes entered by software vendors for accuracy and adherence to nutrient analysis protocols. School districts/schools and State agencies are cautioned to carefully review vendor-added recipes to ensure that nutrient analysis protocols have been followed if these recipes are used for nutrient analyses.

CAUTION

USDA has not reviewed these local databases for accuracy. SFAs/State agencies are cautioned that these local databases may not have the same quality control monitoring as the CN Database, and may contain errors and/or missing data.

- **USDA Quantity Recipes:** The CN Database contains all current USDA-standardized quantity recipes for school foodservice. Only the nutrient information is included – not the recipe ingredients and directions. If a school uses the USDA recipe exactly as displayed on the recipe card (first listed ingredient when alternates are listed and no optional ingredients), the nutrient analysis for the USDA quantity recipes in the CN Database is the most accurate selection for menu analysis. Some software companies have entered the USDA standardized quantity recipes into a separate recipe database, with each ingredient listed, to make it easier for school districts/schools to modify the recipes.

2. Local Database

In addition to the CN Database, some software manufacturers have included nutrient data in their local databases for the following:

- Commercially prepared products, and
- Raw to cooked yield data for certain products

These vendor-added commercially prepared food products or ingredients are identified in the software database under the “Source” as “**Local.**”

All USDA-approved software also allows the user to:

- Enter the nutrient data for new food items, and
- Enter, modify, and analyze recipes.

These user-added or modified food products and recipes should be identified in the software database under the “Source” as “**Local.**”

Overview of Steps for Nutrient Analysis

STEP 1

Preparing for Nutrient Analysis – Gathering the Materials

This process will be discussed in-depth in Chapter 5.
Materials include:

- Draft menus developed, including menu choices and portion sizes for each age/grade group.
- Standardized recipes, including USDA Quantity Recipes and local recipes that will be used in the menus.
- Description or specifications for all food products used in the menus.
- Nutrient information for ingredients used in recipes that are not included in the software database,
- Food production records to assist in weighting the more frequently selected items. If this is an entirely new set of menus this information may not be available until the menus for an entire menu cycle have been served.

STEP 2

Entering Food Items (Ingredients) into the Local Database

This process will be discussed further in Chapter 6 and includes:

- Reviewing the recipes to be used in the cycle menus (SFA) or the review week's menus for the school (State agency) and identifying ingredients missing in the software database.
- Entering the missing ingredients, including volume and weight measurements, and nutrient information.

How Food Manufacturers Provide Nutrient Information

Manufacturers provide nutrient analysis information in one of two ways – “**as purchased**” or “**as served**.”

- “**As purchased**” nutrient analysis data represents the nutritional content of a weight and/or a volume or other measurable amount of the product *exactly as it is purchased*; that is, the nutrients contained in a certain amount of an **unprepared** cake mix or an **unbaked** prepared pizza or pre-fried egg roll. Note: “The Nutrition Facts” labels on products are required to provide “as purchased” data. A sample copy of a Nutrition Facts Label is included in Appendix E.
- “**As served**” nutrient analysis data provides the nutrient values for a product *after it has been further prepared*. For example, a cake mix will provide “as purchased” data on the unprepared mix and may also provide “as served” data on the mix when prepared according to package instructions.

KEY

When entering new ingredients, always indicate whether the nutrient data is “as purchased” or “as served”, and indicate the cooking method.

Food Products Used “As Purchased”

For **ready-to-serve** products, i.e., foods that only require chilling, heating and/or portioning and are used “as purchased”, use the nutrient data exactly as provided on the food product and enter it into the ingredient database.

Food Products Prepared According to Manufacturer’s “As Served” Nutrient Information

When a manufacturer provides “as served” nutrient analysis information, specifies the cooking method, and the school foodservice prepares the food *exactly* according to directions, use the nutrient data exactly as provided on the food product and enter it into the ingredient database.

Food Products Requiring Further Preparation

For purchased products that do require further preparation, if the manufacturer *has not* provided “as served” nutrient infor-

mation, or the SFA uses a differing preparation method, the user must develop a recipe for this prepared ingredient. This will be further described in Chapter 7.

STEP 3

Adding Recipes to the Local Database

Select the correct food items from the database for each recipe in the menus. The person who adds recipes to the local software database for nutrient analysis must have knowledge of the foods that are purchased and how they will be prepared and served in order to select the correct database item for the recipes. The software program, including the CN Database, contains multiple entries (and different nutrient content) of the same food item, based on the varieties, types, and forms of the food item and different preparation methods.

Recipes are nutritionally analyzed based on the form in which the food is consumed. If quantity recipes include raw ingredients that will be cooked or further prepared before consuming, they will need conversion to the *edible* form of the ingredient. This is referred to as “the Yield Factor Method” and will be further discussed in Chapter 7.

Basic Rules for the Yield Factor Method

- Use the form and portion of the food as served.
- Select raw if not heated or cooked.
- Select cooked if cooked before serving, using the database food code for the cooked ingredient.

Convert or adjust the amount of the raw ingredient in the recipe by using a yield factor from the *Food Buying Guide*. Some commonly used cooked food products in schools have a raw to cooked conversion factor included in the software database. If this option is available, it will eliminate the need to convert the raw weight to the cooked yield.

YIELD FACTOR METHOD

A method for nutrient analysis of recipes that requires that each raw ingredient be converted and entered into the recipe database as ready-to-serve or cooked.

If the database does not include raw-to-cooked yield information for a specific ingredient, use yield data from USDA's *Food Buying Guide for Child Nutrition Programs* to convert from the raw to the cooked form.

STEP 4

Entering Specific Menu Planning Data

The order of this process may differ from software program to software program but the data needed to complete the nutrient analysis is common among programs.

- Identify menu name(s) or site names and associated age or grade nutrient standards.
- Identify menu or meal type, such as breakfast or lunch.
- Develop individual menus or link to cycle menus.
- Assign dates to menus and determine a date range for each nutrient analysis, as defined by the school week.
- Determine the number of servings of reimbursable meals and the serving sizes of food or menu items.
- Print the reports for review.

STEP 5

Evaluating and Modifying Menus and Recipes to Achieve the Nutrient Standard(s)

- Review menus for variety.
- Review the weekly nutrient analyses, noting nutrient standards that have not been met.
- If necessary, modify the menus to meet the nutrient standards.
- Reanalyze menus when substitutions occur outside the two-week window.
- Reanalyze menus when menus/food items change, products change, recipes change, or when participation or student selections change.

Chapter 5

Preparing for a Nutrient Analysis

CHAPTER OBJECTIVES

After reading this chapter, you will understand how to:

- Collect the necessary materials and information for conducting a nutrient analysis.
- Collect nutrient data or information for food items that are not listed in the CN Database.

Information and Materials Needed for Nutrient Analyses

Whether you are an SFA conducting your own analysis, or a State agency conducting analysis during an SMI Review, you will need to have the following materials ready and available for nutrient analysis.

1. Menus

School Food Authority Perspective: If the SFA or school district is planning its own menus using NSMP, using another entity to plan menus for ANSMP, or if an SFA is planning menus based on one of the Food-Based Menu Planning systems – but is also conducting its own nutrient analysis of menus – the SFA will need a complete set of draft or tentative menus prepared for data entry. Written menus should include all menu or food choices with portion sizes to be served to each of the district’s established grade or age groupings.

Most SFAs plan *centralized cycle menus* and conduct nutrient analyses of the school district’s menus. School districts that conduct nutrient analysis find that cycle menus, repeated on a periodic basis, save time and resources.

State Agency Perspective: When the State agency conducts nutrient analysis as part of an SMI review of an SFA using food-based menu planning, State staff will choose one week of menus at a selected school(s). They will collect the menus of each age/grade grouping(s) of the school according to the meal pattern(s) used at the school

2. Standardized Recipes

In order to ensure that the nutrient analysis is reflective of what is planned/served, all schools regardless of menu planning system must use standardized recipes. Standardized recipes are those that have been tried and tested in the schools and found to be acceptable to students, have the same

ingredients and method of preparation, and provide a consistent yield.

Once the school district staff has developed these recipes for use in their schools, they should be available for input into the nutrient analysis software or be available to provide to the State agency during an SMI Review.

3. Food Product Descriptions or Specifications

The school district should have written food product descriptions or specifications for all foods used in the schools – not only as a purchasing tool but also for determining which product or ingredient to select from the software database for the analysis.

Examples of Food Product Descriptions:

Ground beef, frozen OR Milk, unflavored, 1 % low-fat
No more than 20% fat
Like IMPS 136

School districts that utilize procurement software can provide a printout of food product descriptions for each food product. This allows the school district/school menu planner or State agency staff to select the correct ingredient from the software database when conducting nutrient analysis.

4. Nutrient Data or Information for Food Products Not in the Database

Identify food products not in the CN Database or in your software's local database.

- Review menus and the standardized recipes to be used for the preparation of the menus.
- Compare to the software database to determine if all food items or ingredients are included.

For *single ingredient* foods or foods in the USDA *Food*

TIP

For those of you with personal computers operating Windows®98SE or higher, you can now install the latest searchable version of the Standard Reference Database directly to your computer for use without Internet connection. Visit the USDA Web site (www.nal.usda.gov/fnic/foodcomp); click on the download link to begin the download process.

Buying Guide, the nutrient data for most products will already be in the CN Database. Examples of single ingredient foods are fruits, vegetables, and milk.

For food products with more than one ingredient, the food may be in the CN Database or it may not, depending upon whether the food has a standard of identity or the product manufacturer has submitted the product information for inclusion in the CN Database. Some software manufacturers also include a limited number of commercially prepared products in their ingredient database. These will be labeled as “Local.”

- If the product is not in the CN Database or your software’s local database, you will need to locate the nutrient information for the product.
- Sources of nutrient data other than CN Database are:
 - Nutrition Facts Labels, often found on institutional-sized product packaging, even though they are not required. A sample Nutrition Facts Label is shown in Appendix E.
 - Nutrient data provided by the manufacturer. A nutrient analysis data form you can ask the manufacturer to complete is included in Appendix F.
 - Nutrient analysis data from another reliable source, such as USDA’s Nutrient Database for Standard Reference.
http://www.nal.usda.gov/fnic/cgi-bin/nut_search.pl

5. Food Production Records

All SFAs/schools are required to document the foods served to students as part of a reimbursable meal. In addition to ensuring that meals served adhere to meal requirements, production records also provide valuable information for conducting nutrient analyses of foods offered to children.

Food production records must include:

- Number of reimbursable meals planned and actually served;
- All menu items (or food items) planned for reimbursable meals including milk⁴ and condiments;
- Portion or serving sizes for each age/grade group;
- Recipes used (note if USDA quantity recipe, or local recipe);
- Brand names, CN label numbers (if desired), and identification numbers of commercially prepared food products;
- Total amounts of foods planned and actually served;
- Documentation of a la carte, adult, and/or other non-reimbursable meals, including number of portions for each of these food items;
- Documentation of substitutions and/or leftovers used.

A Menu Planner for Healthy School Meals provides more information on documenting food production records and provides several sample food production record forms. Additionally, many State agencies have developed State prototypes or sample food production records for use by school districts/schools within the State. Several foodservice software companies, including ones that also have approved nutrient analysis software, have software applications that can be used for creating computerized food production records at the school level.

⁴ If types of milk are not separated on the food production records, milk invoices to support the types and quantities of milk offered must be available.

Chapter 6

Entering Food Items (Ingredients) into the Local Database

CHAPTER OBJECTIVES

After reading this chapter, you will understand how to:

- Enter food items/ingredients into the local database, step by step.
- Delete and modify ingredients in the local database.

How to Enter Data for New Food Products or Ingredients

By this time, all of the recipes and food items or ingredients to be used in the nutrient analysis should have been identified.

TIP

Some SFAs/schools and State agency staff find it helpful to write the database identification code number next to each ingredient on the copied standardized recipes. This not only helps to identify ingredients that are missing in the database, it increases speed of data entry.

Unless the food product description found in the CN Database or local software database exactly matches the food item your SFA/school is using, you'll need to create a new entry for each food item or ingredient using the nutrient data you obtained, and save it in the SFA local database.

Steps for entering new food items/ingredients into the software database:

Follow directions provided by your software program to add a food item or ingredient. The following are general steps to enter a new food item or ingredient.

STEP 1

Assign each new food product an identification number

Some software applications allow the user to assign an identification number while others assign identification numbers automatically. Some software also marks locally entered food items with a specific code. Enter an identification number for the new food item/ingredient or use the number assigned by your software.

STEP 2

Enter a description of the food item/ingredient

Give the food item/ingredient a basic name and then add a short description that will help you locate and identify this food item/ingredient in the future, such as fully-cooked, frozen, raw, etc. Some people find it helpful to include the brand name in the description.

TIP

It is not necessary to create a new food item for a different brand of a generic food item already in the CN Database, such as a particular brand of mayonnaise, canned green beans, etc.

For those nutrient analysis software programs that base their “search” feature on the first word of a food item/ingredient, it is important to develop a system of naming food items that will help in locating this food item/ingredient. For example, you may want to describe all food items/ingredients that contain beef by using “Beef” as the first word in the food item/ingredient description; for example, “Beef, Sliced, in Barbecue Sauce, XYZ Brand.”

STEP 3

Enter a food category for the food item/ingredient

Assigning a food category makes it easier to conduct a search for the food items. In the above beef example, the food category would be “Entrée”.

STEP 4

Identify the source of the data as “Local.”

For any food item entered by the local user, the source is always identified as “Local.”

STEP 5

If the product is commercially prepared, enter the name of the manufacturer and/or brand name.

The brand name of a commercially prepared product can be very important in ensuring that the correct food item/ingredient is chosen from the database,

STEP 6

Enter the unit(s) of measurement for the food item/ingredient.

Add weight measure(s) for all different sized portions and/or weight/volume measures, if appropriate. It is important that the user enter correct measurement information from the label or other document, as all conversions are based on this entry(s). For items served by volume, a weight/volume relationship must be established. To perform a nutrient analysis

KEY

The software cannot calculate the nutrient analysis of a volume measure unless the weight of a volume measure (teaspoon, tablespoon, cup, etc.) is provided by the user.

of a certain volume of fruit and/or vegetable, you must enter a volume measure and the weight associated with that volume.

Refer to the product information from the Nutrition Facts Label/manufacturer's nutrient data information, the *Food Buying Guide* and other resources³ that will allow you to determine the serving size description, in weight, and if appropriate, corresponding volume.

Adding Food Items or Ingredients to Your Database

STEP 1 Ingredient/Food ID: 900004

STEP 4 Data Source: Local

STEP 2 Item Description: Bagel, Enriched, Blueberry

STEP 3 Food Category or Group: Bakery Product

STEP 5 Manufacturer: XYZ Company

STEP 6 Measurement Description

Measurement Description	Weight	Grams/Oz.
4 1/2" diam.	3.8801	Oz.
3 1/2" diam.	2.3281	Oz.
Mini 2 1/2" diam.	0.8466	Oz.

STEP 7

Enter the nutrient composition information

- Enter the base weight (the weight of the food item/ingredient for which the nutrient data has been provided). The base weight/nutrient content can be found on the Nutrition Facts Label or the manufacturer's nutrient data statement.
- Enter the serving size description associated with the base weight (oz, cup, each)

³ Some other resources that might be helpful are:
Bowes and Church, "Food Values of Portions Commonly Used"
Molt, "Food for Fifty"
USDA, "Nutrient Database for Standard Reference"
(<http://www.nal.usda.gov/fnic/foodcomp>)

Close Save Print Duplicate Search Open

Ingredient/Food ID: 900004 Base Weight or Serving Size: 2.3281 oz.

Item Description: Bagel, Enriched, Blueberry

Calories	<input type="text"/>	kcal	Protein	<input type="text"/>	Gm.
Total Fat	<input type="text"/>	gm.	Iron	<input type="text"/> % or <input type="text"/> mg.	
Saturated Fat	<input type="text"/>	gm.	Calcium	<input type="text"/> % or <input type="text"/> mg.	
Cholesterol	<input type="text"/>	mg.	Vitamin A	<input type="text"/> % or <input type="text"/> IU	
Sodium	<input type="text"/>	mg.	Vitamin A	<input type="text"/> % or <input type="text"/> IU	
Carbohydrates	<input type="text"/>	gm.	Vitamin C	<input type="text"/> % or <input type="text"/> mg.	
Dietary Fiber	<input type="text"/>	gm.	Water	<input type="text"/>	gm.
			Ash	<input type="text"/>	gm.

STEP 7

Enter the nutrient composition information

- Enter the nutritive value of each nutrient for the base weight. Enter the actual values for calories, total fat, saturated fat, cholesterol, sodium, carbohydrate, dietary fiber and protein. If you're using the Nutrition Facts Label, enter the % Daily Value (DV) for iron, calcium, vitamin A, and vitamin C and the software will convert to the appropriate nutritive value. If you are using a manufacturer's nutrient data statement, enter in actual amounts of iron, calcium, vitamin A, and vitamin C.

NOTE: Please be aware that the way vitamin A is reported is changing from RE (retinol equivalents) to RAE (retinol activity equivalents). When these changes are completed, USDA will provide guidance on how to use the new units.

- If the Nutrition Facts Label or the manufacturer's nutrient data statement indicates there is an insignificant amount of a nutrient, enter zero "0" for the nutrient value.

KEY

If there is no information for a nutrient, follow the software directions to mark it as missing nutrient information. Do not enter zero "0" for missing nutrient information because: 1) you will not be able to identify missing data, and 2) you will perform an inaccurate nutrient analysis.

It is not necessary to enter the information for water or ash for nutrient analysis; however, if the information is available, it provides a more accurate analysis of the product's weight.

STEP 8

Review data entry for accuracy and save the data

Before saving the data, review each entry to ensure that the data has been entered correctly. Follow your software instructions for saving entered data.

STEP 9

Print a report of ingredients and recheck for accuracy

Most of the software programs allow the user to print the food item/ingredient information in various ways – alphabetically, by local food items/ingredients only, by food items/ingredients used in recipes only, and by missing nutrient data. This is a good way to check the accuracy of the data entry and to identify food items/ingredients with missing data

To modify or delete ingredients, you must be in the modify/edit mode

Only food items entered by the local user in the local database may be modified or deleted.

- To modify an existing ingredient in the local database
 - Locate the product in the database, and
 - Repeat steps 2 through 7.
- To delete or deactivate a local food product from the database, follow the software instructions for deleting food products.

Chapter 7

Adding a Recipe to the Local Database

CHAPTER OBJECTIVES

After reading this chapter, you will understand how to:

- Select the correct food items and correct measures of foods for recipes.
- Determine the difference between cooks' recipes and recipes for nutrient analysis.
- Describe the yield factor method using the Food Buying Guide when analyzing the nutrient content of a recipe.
- Adjust moisture and fat loss or gain in selected commercially prepared products.

How the Nutrient Analyses of USDA Quantity Recipes Were Calculated

As discussed earlier, only the *nutrient profiles* (the nutrient analysis totals of the USDA Quantity Recipes) are included in the CN Database – not each specific ingredient. It is important for the menu planner to understand the protocols by which these recipes were analyzed.

- **Based on first ingredient only:** When USDA recipes show alternate ingredient choices, the nutrient analysis is based on the first ingredient listed, not the alternate ingredient. Example:

Recipe D-13 Beef or Pork Taco

Raw ground beef or raw ground pork is listed as an ingredient. The nutrient analysis in the CN Database is based on the first ingredient listed, raw ground beef. Therefore, if the SFA/school uses raw ground pork, or a combination of ground beef and ground turkey to prepare this recipe, a new recipe must be entered into the local recipe software database and the nutrient analysis recalculated.

- **Optional ingredients are not included:** The CN Database nutrient profile does not include any ingredients listed as optional in the recipe. For example:

Recipe D-20 Chili Con Carne with Beans

Cheddar cheese is an optional ingredient in this recipe and was not included in the nutrient analysis. If cheddar cheese is included as an ingredient in the recipe, the recipe including cheddar cheese must be entered into the local recipe software database and the nutrient analysis recalculated.

- Variations of USDA recipes: Some, but not all, recipe variations are included in the CN Database. Example:

Recipe B-4 Baking Powder Biscuits

Lists four variations:

1. B-4a Baking Powder Biscuit using Master Mix
2. B-4b Cheese Biscuits
3. B-4c Drop Biscuits
4. B-4d Wheat Biscuits

Each of these recipe variations is included in the database, but many other variations are not. For example, if the school district/school is using a variation of a recipe that is not in the database, a new recipe with the recipe variation must be entered into the local software database and the nutrient analysis recalculated.

USDA Quantity Recipes That Have Been Modified

Local recipes and USDA Quantity Recipes with optional or alternate ingredients (or with other changes) will need to be entered into the local database recipe file. Follow the software directions. However, regardless of which software program is used, all of these factors need to be considered before adding a new recipe.

KEY

Because many schools use alternate or optional ingredients or variations of USDA recipes, some software companies have entered the USDA recipes, including ingredients, into the local database. This data entry may help schools easily modify the recipe, rather than having to enter the entire recipe with the alternate ingredient or variation into the local database. However, USDA has not reviewed this data. SFAs/State agencies must review these recipes prior to modifying them to ensure they have been entered according to the nutrient analysis protocols, including yield factors.

KEY

Individuals performing nutrient analyses must have knowledge of the foods that are purchased and how they will be prepared and served in order to select the correct database item. The C N Database contains multiple entries (and nutrient content) of the same food item, based on the varieties, types, and forms of the food item and different preparation methods.

Selecting the Correct Food Items/Ingredients for Recipes

To ensure the correct calorie and nutritive value of the recipe, it is important to select the correct food item/ingredient from the software database. The nutrient content of raw foods is different from the nutrient content of cooked foods.

Recipes that require cooking are a challenge for nutrient analysis because the recipes contain raw ingredients, and yet we eat cooked products. Cooking changes the nutrient content, the moisture content, and, very frequently, the fat content.

Cooks' or Production Recipes Versus Recipes for Nutrient Analysis

Important: Recipes for nutrient analysis and cooks' or production recipes are usually **different things**.

- The amount of calories and nutrients in a food will vary depending on the **edible portion** of the food and whether the food is raw or cooked.
- The ingredients in your standardized recipes or cook's recipes usually indicate foods in their raw form, as purchased, including peel, bone, skin, etc.
- For nutrient analysis purposes, recipes must include only the edible portion of a food.
- Thus, the ingredient information in recipes must be adjusted or converted to reflect what is actually consumed.

Using the Yield Factor Method

After selecting the correct ingredient for the recipe, the menu planner will need to use the yield factor method to convert the raw, frozen, condensed, or dehydrated food item to the form the item will be when consumed. There are numerous food items or ingredients that need to be converted to an edible version such as raw meats, raw and frozen vegetables, and dried pasta that will be cooked before consumption.

Heat affects the nutrient content of many foods. The nutrient profiles of database foods described as cooked have been adjusted for the nutrient changes that occur with cooking. For example, the nutritive value of frozen green beans cooked with salt will be different from the nutritive value of canned green beans, which have been heated.

The Database features a list of nutritive values of foods prepared by various cooking methods. Cooked foods may be listed, for example, as:

- Boiled
- Broiled
- Baked
- Fried



KEY

The Yield Factor Method requires that each raw recipe ingredient be converted and entered in the recipe database as ready-to-serve or cooked. If the database does not have the raw-to-cooked yield for a specific ingredient, use yield data from USDA's *Food Buying Guide* to convert from the raw to the cooked form.

Vegetables

Vegetables that are indicated in the recipe in the as *raw* or *frozen* form will need to be converted to the *cooked* form because of change in nutrient and in the moisture content upon heating.

Nutrient Retention

Heat affects Vitamin C content
1-cup green beans



Example: Recipe Using Frozen Whole Green Beans

A recipe calls for 10 pounds of frozen whole green beans to be used to make Green Bean Casserole. To enter the recipe, you would select the cooked green beans (without salt) from the database. We selected *Beans, Green, Whole, Boiled, No Salt* (CN Database #11061).

- To convert the green beans, as purchased, to an edible amount of cooked green beans for the nutrient analysis, refer to the *Food Buying Guide*, page 2-16.

Section 2—Vegetables/Fruits					
1 Food As Purchased, AP	2 Purchase Unit	3 Serv-ings per Purchase Unit, EP	4 Serving Size per Meal Contribution	5 Purchase Units for 100 Serv-ings	6 Additional Information
BEANS, GREEN (continued)					
Beans, Green, canned Whole <i>Includes USDA Commodity</i>	No. 10 can (101 oz)	39.5	1/4 cup heated, drained vegetable	2.6	1 No. 10 can = about 58.0 oz (13 cups) drained, unheated beans
	No. 10 can (101 oz)	52.2	1/4 cup drained vegetable	2.0	
	No. 2-1/2 can (28 oz)	14.4	1/4 cup heated, drained vegetable	7.0	1 No. 2-1/2 can = about 16.0 oz (3-5/8 cups) drained, unheated beans
	No. 300 can (14-1/2 oz)	4.58	1/4 cup heated, drained vegetable	21.9	1 No. 300 can = about 7.3 oz (1-1/8 cups) heated, drained beans
	No. 300 can (14-1/2 oz)	6.95	1/4 cup drained vegetable	14.4	1 No. 300 can = about 7.6 oz (1-5/8 cups) drained, unheated beans
	Pound	8.20	1/4 cup drained vegetable	12.2	
Beans, Green, frozen Cut <i>Includes USDA Commodity</i>	Pound	11.6	1/4 cup cooked, drained vegetable	8.7	
Beans, Green, frozen French style <i>Includes USDA Commodity</i>	Pound	12.0	1/4 cup cooked, drained vegetable	8.4	
Beans, Green, frozen Whole <i>Includes USDA Commodity</i>	Pound	10.7	1/4 cup cooked, drained vegetable	9.4	1 lb AP = 0.88 lb (about 2-5/8 cups) cooked vegetable
BEANS, GREEN, FLAT ITALIAN					
Beans, Green, Flat Italian, canned Whole	No. 10 can (103 oz)	35.1	1/4 cup heated, drained vegetable	2.9	1 No. 10 can = about 56.6 oz (8-3/4 cups) heated, drained beans
	No. 10 can (103 oz)	42.7	1/4 cup drained vegetable	2.4	1 No. 10 can = about 63.3 oz (10-5/8 cups) drained, unheated beans

NOTE

Because the yield and nutritive value changes are small, menu planners may use the data for “unheated” canned food items for nutrient analysis.

- The *Food Buying Guide* indicates that each pound of frozen green beans yields 0.88 pounds of cooked, drained green beans. 10 pounds X 0.88 = 8.8 pounds of cooked green beans
- The menu planner would select from the CN database, ingredient number 11061, *Beans, Green, Whole, Boiled, No Salt* and enter a weight of 8.8 pounds of cooked green beans into the Green Bean Casserole recipe.

Fresh Vegetables in Cooked Recipes

There are several fresh vegetables that are frequently added to school recipes made “from scratch.” To expedite the conversion of these vegetables from raw to cooked, conversion from yield data in the *Food Buying Guide* of 1 pound raw to cooked is provided in Appendix G.

Meats

There are a number of factors that must be considered in entering recipes that contain raw meat for nutrient analysis. Remember, the recipe must be analyzed to reflect the nutrients in the recipe that the children will actually consume (yield factor method).

When there is “Raw-to-cooked yield” in the database:

Several of the meat items in the software database have a conversion factor built in for raw-to-cooked data. For those items, the computer will calculate the nutritive value of the cooked yield when the amount of raw meat in the recipe is entered.

When raw-to-cooked data is available, you would ...

1. select the “cooked” meat item from the database,
2. select “yield after cooking,” “raw to cooked,” “raw,” “raw yields,” or other language used by your software program that indicates you may enter a raw weight,
3. enter the weight of the raw meat as indicated in the recipe, and
4. the analysis will be calculated by the software using the nutritive values and cooked weight conversion from raw weight.

When there is no “raw to cooked yield” in the database:

What if the software does not indicate that you can enter the raw weight of the meat? In that case, you must convert the raw weight in the recipe to the cooked or edible weight, using the Yield Factor Method.

To convert raw weight to edible or cooked weight, you would...

1. select the “cooked” meat item from the database,
2. convert the raw weight to the edible or cooked weight by multiplying the raw weight of the meat called for in the recipe by the percent yield in the *Food Buying Guide* (Column 6)
3. enter the cooked weight into the computer

KEY

The Yield Factor Method involves using the food code for the cooked ingredient from the database and adjusting the amount of ingredient in the recipe by using yield data from USDA's *Food Buying Guide*. The “cooked codes” and cooked yields will reflect the losses or gains in moisture and fat, as well as the effect of cooking on other nutrients.

Example of converting raw to cooked yield for Beef Stew:

Recipe for Beef Stew

An SFA/school is entering a local recipe for beef stew which calls for 21 lbs. of raw stew meat (the recipe calls for browning the meat and draining the fat) and there is no raw-to-cooked yield for beef stew in their database. Foodservice staff would check the USDA *Food Buying Guide* for the cooked yield of stew meat (61 percent), calculate the cooked weight, and enter that figure along with the ingredient code for cooked stew meat. The CN Database item would be #13004, *Beef, Composite of Trimmed Retail Cuts, Cooked*. This example is demonstrated below:

To correctly enter this recipe for nutrient analysis, the user would enter the correct identification code for cooked beef stew meat (13004) or find cooked beef stew meat through the search feature. Then enter 12.81 pounds.

Converting Raw Weight of Beef Stew Meat to Cooked Weight

Example

Your recipe calls for 21 lbs. of raw beef stew meat. You need to know the weight of the stew meat after cooking. Information excerpted from the *USDA Food Buying Guide*.

Food as Purchased	Beef, Stew Meat (composite of trimmed retail cuts)
Purchase Unit	Pound
Additional yield information	1 lb. "As Purchased" = .61 lbs. cooked lean meat

Answer: 21 lbs. x .61 = 12.81 lbs. of cooked beef stew meat

"As Purchased" vs. "Edible Portion" of Chicken (without bones and or skin)

The nutritive value of a three-ounce portion of cooked chicken with the skin and bones will be different from the nutritive value of a three-ounce portion of cooked boneless chicken.

If a recipe calls for 25 lbs of raw chicken thighs to be baked and served with the skin, you must convert the 25 lbs. of **as purchased** raw chicken thighs to the equivalent weight of the baked meat and skin only.

To enter the correct chicken ingredient into the recipe, select CN Database # 5094, *Chicken, Thigh, Roasted, with Skin*, and enter: 13 pounds.

The *Food Buying Guide* also contains **as purchased** to **edible portion** yield data for cooked chicken without skin.

Example of Converting Raw Chicken to Cooked Chicken with Skin

Your recipe calls for 25 lbs. of raw chicken thighs. You need to know the weight of the edible portion of the cooked chicken meat with skin (without the bones).

Food as Purchased	Chicken thigh, 4 oz.
Purchase Unit	Pound
Additional yield information	1 lb. "As Purchased" = .52 lbs. cooked chicken with skin

Answer: 25 lbs. x .52 = 13 lbs. of cooked chicken with skin

Exception to Use of Yield Factor Method for Some Cooked Meats

There is an exception to the rule of choosing a cooked meat item from the database and calculating the cooked meat yield. When you are entering a recipe where the fat will remain in the final product, you must select the raw meat database item and enter the weight of the raw meat into the recipe for analysis.

For example, if you are analyzing a recipe for Red Beans with Sausage, and the recipe instructions specify to slice the uncooked sausage and add it to the beans during cooking, you need to select the raw sausage data and the weight of the raw product. This is because the fat which would normally have cooked out and been drained off will remain in the final product. (This is a good example of a recipe that should be modified—using either the cooking method and/or ingredients, to reduce fat and saturated fat.)

Other examples of situations where you would choose the raw meat database item and enter the weight of the raw meat into the recipe for analysis include recipes for soups or stews where raw meat is added to the soup or stew and the fat contained in the raw meat ends up in the final product. However, if the soup or stew is chilled after preparation and the fat is skimmed off the top, it is appropriate to choose the cooked meat item from the database and enter the cooked weight of the meat.

Dried Pasta

Determining Cooked Volume of Dried Pasta

A recipe for Spaghetti and Marinara Sauce calls for cooking the dried pasta in boiling salted water prior to combining it with the sauce. This presents a difficult situation for nutrient analysis because the pasta does not absorb the total amount of either the boiling water or the salt during cooking. This problem can be resolved by selecting Spaghetti, Cooked, Enriched, with Added Salt from the CN Database, item number 20321. But first, the weight of the dried pasta has to be converted to the appropriate amount of cooked pasta, using the Yield Factor Method. The water and salt used in the recipe are **not included** in the computer data entry for the nutrient analysis.

The user would select the *Spaghetti, Cooked, Enriched, with Added Salt* from the CN Database (#20321) and enter: 21 cups of cooked spaghetti.

Example of Converting Dried Weight of Spaghetti to Cooked Volume

Determining cooked volume of 4 lbs. of dried spaghetti from the USDA
Food Buying Guide

Food as Purchased	Dried Spaghetti
Purchase Unit	Pound
Servings per purchase unit	10.6
Serving size or portion	1/2 cup

Answer: Yield data from *Food Buying Guide* indicates 1 lb. dried spaghetti = 5.25 cups cooked pasta
4 lbs. x 5.25 cups = 21 cups of cooked spaghetti

The user would select the *Spaghetti, Cooked, Enriched, with Added Salt* from the CN Database (#20321) and enter 21 cups of cooked spaghetti.

Exception: If the **pasta is cooked in and absorbs recipe liquid**, the dry pasta would be the appropriate item to select from the database and the dry weight of the pasta would be entered. For example, a recipe for Lasagna with Ground Beef calls for the lasagna noodles to be cooked in the tomato sauce. In this case, the dried pasta would be the correct database item to select and the dry weight of the pasta called for in the recipe would be entered.

Adjusting Moisture and Fat Loss or Gain in Commercially Prepared Food Products

Many commercially prepared food products, such as frozen French fries, chicken nuggets, and fish portions, will undergo further preparation in the school kitchen.

The most common preparation technique is oven heating (bringing a fully-cooked product to the proper serving temperature). Because oven heating generally has minimal impact on moisture or fat loss, fully cooked, prepared food products that are only oven heated do not need adjustment for fat/moisture loss. However, these same products may have significant moisture loss and fat gain during deep-frying.

TIP

Always check the database first and use the item that reflects the cooking method for the food item.

The CN Database already contains some fried food items that reflect moisture loss and fat gains which occur during deep-frying. For example, if an SFA uses generic frozen French-fried potatoes and deep-fat fries them in commodity vegetable oil, the best selection from the CN Database would be Item 11404, *Potatoes, frozen, french-fried, fried in vegetable oil*. Select the database item rather than entering data on the French fries you are purchasing and adjusting for moisture loss and fat gain, since this item description already reflects moisture loss and fat absorption

KEY

If a recipe for the fried product will need to be developed because there is no nutrient data available for moisture loss or fat gain, the database food/ingredient code for the commercially prepared food product, the database food/ingredient code for the type of fat used in frying, and the percentages of moisture loss and fat gain will have to be entered in the recipe.

However, there are commercially prepared products that **may not be in the database**, as a deep-fried version. If you serve a commercially prepared product which will be deep fried, and it is not in the database, you will need to create a recipe that can be adjusted for moisture losses and fat gains which occur with frying (unless the Nutrition Facts Label or the manufacturer has provided “as served” data using the method of cooking and/or other preparation that will be used in the school kitchen. In this case, the food item can be entered directly into the ingredient database).

The USDA-approved software programs will allow the user to enter the type of fat and percentages of moisture and fat losses directly into the recipe and make the calculations. Assume zero (0) moisture/fat change for food items that are only heated/reheated.

Refer to Appendix H to obtain common moisture losses and fat gains during deep-frying, and incorporate this information into the recipe.

Selecting the Correct Measure of a Food

Volume vs. Weight

The unit of measure entered will depend on how the food is used in the recipe or the menu. When selecting data be sure the correct measure of food is entered, for example, teaspoon, gram, cup, gallon, pound or fluid ounce. If weight measures (oz, lb) are available for a recipe, it is more accurate to enter the weight measure.

The database contains the nutritive values of food items per 100-gram weights. The software will convert any measure (volume, weight) of a food item to a gram weight and calculate its nutritive value for the recipe ingredient or menu item amount—provided that each volume measure has a corresponding weight entered into the database.

In selecting the correct measure of a food, it is critical to know whether the food is measured by weight or by volume. **Unless it is specifically designated as fluid ounces (fl. oz.) in the database, any measure that is listed as ounces (oz) is calculated as a *weight* measure.** Weight measures include grams, ounces, and pounds. Volume measures will be listed as teaspoons, tablespoons, fluid ounces, cups, pints, quarts, and gallons.

The chart below demonstrates nutrient analysis errors that can occur when volume measures are confused with weight measures.

Example: Selecting the Correct Measurement

Menu Items:

1/2 cup Raisin Bran
3/4 cup Canned Peaches
1 cup Popcorn

	Weight (Incorrectly Entered)	Volume (Correctly Entered)
Raisin Bran	4 oz. = 356 calories	1/2 cup = 79 calories
Peaches	6 oz. = 92 calories	3/4 cup = 102 calories
Popcorn	8 oz. = 587 calories	1 cup = 23 calories
Note: 4 oz. = 1/4 pound (not 1/2 cup); 6 oz. = 3/8 pound (not 3/4 cup); 8 oz. = 1/2 pound (not 1 cup) 1/2 cup = 4 fluid ounces; 3/4 cup = 6 fluid ounces; and 1 cup = 8 fluid ounces.		

With all of these considerations in mind, the user can now begin to enter the data for a local recipe.

Steps to Entering a Local Recipe

You must follow your software directions as these directions may vary from software program to program.

STEP 1

Enter recipe number

Most software programs will automatically assign a number as each new recipe is added.

The screenshot shows a software window titled 'Close', 'Save', 'Print', 'Duplicate', 'Search', 'Open'. The form contains the following fields:

- STEP 1:** Recipes or Item Number: (text input)
- STEP 2:** Recipe Name or Description: (text input)
- STEP 3:** Recipe Category: (dropdown menu)
- STEP 4:** Recipe Source: (dropdown menu)
- STEP 5:** Serving Size: (text input)
- STEP 6:** % Fat Change: (text input)
- STEP 7:** % Moisture Change: (text input)
- STEP 8:** Number of Servings: (text input)
- STEP 9:** Fat Item ID or Type of Fat: (text input)

Below the form is a table with 7 columns: Ingredient or Item No., Ingredient Description, Quantity, Units of Measure, Quantity, Units of Measure, Quantity. The table has 8 rows, numbered 1 through 8.

KEY

When the menu planner uses weighted averaging for nutrient analysis, all menu items must be weighted, including milk, condiments, salad dressings, etc.

STEP 2

Enter the recipe name

For software programs that base the “search” feature on the first word of the recipe name, it is important to develop a system that will help you locate your recipes. For example, a recipe for Baked Chicken could be listed as Chicken, Baked. This will allow you to search through all the chicken recipes.

STEP 3

Identify the recipe category

For example, Entrees, Salads, Vegetables, etc. This will also be of assistance in searching for a recipe.

STEP 4

Identify the source of the recipe

You will always enter “Local” even when the recipe is a USDA recipe that you are modifying.

STEP 5

Enter the serving or portion size

Example, 1/2 cup, 2.25 oz. patty, 2” x 3” rectangle, 1 each, etc.

STEP 6

Enter the number of servings the recipe makes (yield)

STEP 7

Select the correct food items/ingredients from the database and enter the correct amount

- View the food ingredients listed in the database.
- Select the correct food items or ingredients from the database.
- Enter the correct amount of each ingredient according to previous directions for the **Yield Factor Method**.

STEP 8

If applicable, enter the type of fat used for deep-frying and the percent moisture loss or fat gain for the recipe

Follow your software directions for entering this information. Refer to Appendix H for percent moisture loss or fat gains for selected products.

KEY

Selecting the correct food item from the database is critical to accurate nutrient analysis. For example, if the SFA uses a firm hydrogenated soybean oil margarine but selects a soft corn oil margarine from the CN Database, nutrient analysis will be inaccurate.

STEP 9

Compare the computer recipe with your printed recipe to be sure that:

- the yield is correct,
- the serving size is correct,
- all ingredients are included,
- the correct food items were selected from the ingredient and recipe databases, and
- the amount of each ingredient is correct using the **Yield Factor Method**.

STEP 10

Save the recipe to the local database recipe file.

STEP 11

Compare the computer recipe with your printed recipe to be sure that:

The following will be calculated for each recipe:

- Gram weight of one serving
- Calories
- Protein
- Carbohydrate
- Total fat
- Saturated fat
- Vitamin A
- Vitamin C
- Iron
- Calcium
- Percentage of calories from protein
- Percentage of calories from carbohydrate
- Percentage of calories from saturated fat
- Cholesterol
- Sodium
- Dietary fiber

STEP 12

Compare the gram weight calculated for one serving with the average gram weight of one serving

(See the section below on *How the Software Calculates Recipes*) This comparison can help to identify if there has been an error in the data entry of the recipe.

STEP 13

Print the recipe, including nutrient analysis

How the Software Calculates the Nutrient Analysis

When recipes are entered into the database, both a serving size and a recipe yield (the number of servings a recipe makes) are entered. It is important to know that the nutrient analysis software calculates the nutrients in a serving based on the *number of servings in the recipe* (the yield), **not** based on the *size of the serving* entered. In addition, the nutrient analysis software will calculate the gram weight of one serving. (Some software programs also display the weight of one serving in ounces.)

If the recipe has been entered accurately using the Yield Factor Method, the gram weight of one serving as calculated by the software should be close to the average actual gram weight of one serving.

Checking Recipes for Error

The comparison of the gram weight of one serving as calculated by the computer with the actual average gram weight of one serving can be used to check a recipe for possible errors. It is expected that there will be some variation in the two weights because nutrient analysis is not an exact science, and moisture loss may not always be accurately reflected in the calculations. A significant discrepancy between the two weights may indicate one of the following:

- an error in data entry,

CAUTION

Remember the software calculates a nutrient analysis by the yield (number of servings). When recipe ingredients and/or quantities are changed, the recipe yield is frequently changed. You must re-standardize the recipe, recalculate yield and enter a corrected yield, if applicable.

- the recipe has not been standardized and either the yield or the serving size is inaccurate, or
- the Yield Factor Method has not been followed.

If the recipe is portioned using a scoop or measuring spoon, you probably do not know the weight of an average serving.

The following procedures can be used to calculate the weight of one serving of a recipe.

- Prepare the recipe and carefully portion out 5 servings using the stated portion size. Using a gram scale, weigh each serving.
 - Add the serving weights and divide the total by 5. This will give you an "average" serving weight.
 - To get a better estimate of true serving weight, 2 persons should do the portioning and weighing of 5 samples each.
- OR
- Prepare the recipe, weigh the total quantity produced (minus weight of container) and divide by the number of servings (yield) of the recipe.

Creating a Recipe Variation

USDA Quantity Recipe Variations for Optional Ingredient(s)

When the school district/school is preparing a USDA recipe exactly as written with the only exception that they are simply adding an ingredient(s) that is listed as "optional" in the recipe (e.g., adding the optional ingredient, raisins, to Applesauce Cake), a new recipe should be created and named.

Example: Applesauce Cake with Raisins
Source: Local

Since the nutrient profiles of all USDA Quantity Recipes are incorporated into the CN Database, the user would select the original USDA recipe from the food item/ingredient file and insert it into the new recipe. Then the user would need only to add the optional ingredient(s) to this new local recipe.

USDA Recipe Variation for Alternate Ingredient(s) or other Modifications

When the SFA/school prepares a USDA recipe using an alternate ingredient(s) or make other changes to the recipe, you will need to create a new recipe using the Yield Factor Method by entering the ingredients and their amounts and saving it as a different recipe. Or, if the software company has entered the USDA recipes with its ingredients, you may copy the appropriate USDA recipe and review it carefully for accuracy. Then, following the Yield Factor Method, you may change the ingredient(s) and/or amount(s) as needed, and name and save it as a different recipe.

Modifying a Local Standardized Recipe

When adding a recipe variation such as alternate or optional ingredients to a local database recipe, you may modify the original recipe and then resave it. If you want to keep both recipe variations, you may copy the original recipe, make changes, rename, and save the recipe.

When local recipes are entered and saved to the recipe file, you can:

- Change, add or delete food ingredients and amounts.
- Change preparation and/or serving instructions.

Single Serving Recipes

In addition, for nutrient analysis, recipes can be made for single servings, for example 1/2 cup French fries, 1 beef patty, 1 hotdog and bun. The software program is able to convert the nutrients in the single serving recipes to the nutrients in the number of servings that are actually planned or served.

KEY

Before using USDA Quantity Recipes developed by the software vendor in a separate recipe file, the user must review these recipes to ensure that the nutrient analysis protocols have been followed.

Creating a Theme Bar Recipe

Salad bars and other food bars, such as pasta bars, taco bars, deli bars, potato bars, and such can serve as the complete reimbursable lunch (except for milk) or as a food or menu item that is part of a reimbursable lunch—depending on the food items on the bar and how it is structured. The recipe and nutrient analysis of the food bar is based on historical usage of food bar items.

Standardized recipes can be developed for food bars and entered into the database at the local level. The recipe should be constructed based on a “typical” day.

To develop a standardized recipe for a theme bar:

Step 1: Determine the number of servings the recipe produces (yield). This would be the number of people who use the food bar, regardless of whether by students for reimbursable meals, by adults, or for a la carte sales.

Step 2: Determine the serving size. The serving size is the minimum quantity that the student must select for Offer versus Serve. For example, for an entrée salad, the minimum quantity might be 1 cup.

Step 3: Determine the amount of each food ingredient in the recipe:

- Measure the amount of each ingredient placed on the food bar on a typical day (the amounts placed on the bar at the beginning of the meal service plus any additions to the bar during the meal service).
- Measure the amount of each ingredient left over on the food bar at the end of the meal service.
- Subtract the amount left over from the amount placed on the food bar for each ingredient to determine the amount of each ingredient to enter for the recipe.

Once the recipe is entered into the database, it can be used in planning and/or analyzing a day's menu. The number of servings entered into the menu for nutrient analysis would be the estimated number of students who are expected to select a reimbursable meal from the food bar (or the estimated number of servings of the menu item which will be selected as part of a reimbursable meal, if the food bar does not offer a full meal).

A separate recipe must be developed for each variation of the food bar. For example, if you rotate 2 salad bars, one that features iceberg lettuce and another that features fresh spinach, two separate recipes would need to be developed. If other ingredients vary, each separate combination would need a separate recipe.

Shortcut Hints for Data Entry for Menu Analysis: Creating Recipes to Simplify Data Entry

In addition to your own local standardized recipes that you will be entering in your software database, there are “recipes” that you can create to make data entry speedier. These “recipes” are not actually recipes for food production but are data-entry shortcuts for analyzing menus. The use of shortcut data entry recipes will reduce the amount of data entry for each menu. These are menu item choices that do not vary from day to day and which have usage that has been documented to be consistent.

This shortcut is illustrated for milk:

- A school district's menus have consistent choices for milk, and consistent student selection from one meal to the next.
- In weighted averaging, the milk shortcut data entry recipe must be based on the choices of milk available and the percentages consistently chosen. If the SFA plans central menus, it would be based on usage for the district. This can

KEY

If an SFA/school uses a data entry shortcut recipe for milk, they must develop their own using SFA/school data.

be calculated from milk invoices. If milk invoices can be separated by age/grade grouping used in the district (example K-6, 7-12), a more accurate analysis will result.

Example for Weighted Averaging:

The Central City School District plans central menus and uses weighted averaging for nutrient analyses. Four kinds of milk are offered every day: whole milk, low-fat milk (1%), chocolate low-fat milk (1%), and nonfat milk. During the past year, 12% of the district purchases of 1/2 pint cartons were whole milk, 57% were 1% chocolate low-fat milk, 21% were 1% low-fat milk, and 10% were nonfat milk.

The Data Entry Shortcut Milk Recipe was created as follows:

For 100 servings:

12 - 1/2 pints whole milk

57 - 1/2 pints 1% chocolate low-fat milk

21 - 1/2 pints 1% low-fat milk

10 - 1/2 pints nonfat milk

- When using simple averages, the milk shortcut data entry recipe must be based on giving equal weight to each milk available, regardless of percentage choices by students.

Example for Simple Averages:

The Unified City School District plans central menus and uses simple averages for nutrient analyses. Four kinds of milk are offered each school day: reduced fat milk (2%), low-fat milk (1%), nonfat milk, and chocolate nonfat milk.

The Data Entry Shortcut Milk Recipe was created as follows:

For 100 servings:

25 - 1/2 pints 2% reduced fat milk

25 - 1/2 pints 1% low-fat milk

25 - 1/2 pints nonfat milk

25 - 1/2 pints chocolate nonfat milk

- If the standard kinds of milk offered changes, or if the district uses weighted averages and the proportions selected by the students change, then a new recipe must be created.

Other Shortcut Data Entry Recipes

Other shortcut data entry recipes for standardized choices can be created if the items offered do not vary and student choices are consistent (for districts using weighted averages). Some examples of menu items offered as standardized choices by SFAs/schools include fruit juices, cold cereals, and assorted salad dressings.

Creating shortcut data entry recipes for condiments is not recommended unless the exact condiments are offered each day, and students select the exact percentage of condiments (weighted averaging). Since student selection and usage of condiments is usually dependent on the day's menu, a condiment shortcut data entry recipe cannot be developed. For example: Students may select catsup more frequently on days that hamburgers and French fries are offered.

Common Errors in Data Entry of Recipes

- Incorrect food item/ingredient selected from database
- Incorrect measurements, such as weight/volume errors, incorrect recipe serving sizes, etc.
- “As Purchased” weight used rather than “Edible Portion”
- Recipes entered have not been standardized, or standardized recipes have been analyzed but not used in the SFA/schools.

Reminders:

- Carefully select the correct food item from the database.
- Choose the correct measurement, such as volume or weight.
- Use cooked weight for cooked foods. (May require conversion from the *Food Buying Guide*).
- Use only standardized recipes that are used in the SFA/schools. For example, a recipe for rolls must show the added fat if butter or margarine is brushed on top of rolls

Chapter 8

Entering Menu Plans

CHAPTER OBJECTIVES

After reading this chapter, you will understand how to:

- Identify menu (site) names and associated nutrient standards for each grade or age grouping used.
- Determine the number of projected servings by weighted or simple averages.
- Enter the portion size of each menu item.
- Handle field trips in nutrient analysis.

KEY

Menu Name and Site are terms used by the various software programs; the terms may refer to an actual meal site or it may be used to refer to an age/grade group for whom the meal is planned. An example would be a menu for one K-6 school or a centralized menu for a group of K-6 schools.

The various nutrient analysis software programs may have a different order of steps necessary to establish menu plans for analysis, but the following steps should be common to all the software.

STEP 1**Identify Menu (Site) Name and Associated Grade or Age Nutrient Standards****Menu (Site) Names**

In nutrient analysis, the nutrient analysis software programs require a separate data entry menu name or site name for each *age/grade group* used by the SFA. Menus are planned to meet the nutrient levels of each age/grade group by adjusting the portion size of each menu item. It may not be necessary to re-enter menus for each age/grade group. All software programs allow the user to *copy* a menu and adjust portions or change menu items as needed.

Some nutrient analysis software programs allow menus to be created and then allow the menu planner to assign them to schools (sites) and age or grade groups. Other software programs require establishing the menu (site) name and age or grade group prior to entering menu data. Follow the procedures of your software program.

Assigning Grade or Age Groups for Nutrient Standards

Assign the age/grade groups to each specific menu name or site. Use ages or grades as appropriate (defined by your menu planning approach). These age/grade groups have nutrient standards preset in the software. Examples are:

- Grades K-6
- Grades 7-12
- Grades K-3
- Grades 4-12
- Ages 3-6
- Ages 7-10
- Ages 11-13
- Ages 14 and older

The software has been programmed to adjust the nutrient standards to the grade or age grouping entered.

Creating Customized Age/Grade Groups (for NSMP/ANSMP Only)

You can customize age groups that are not established in the software. The software will then create customized age-based nutrient standards for the specific ages or grades of students in a school or district.

Differences in the Way SFAs and State agencies Set Up Menu Plans

SFAs and State agencies conducting nutrient analysis will generally differ in their approach to setting up menu plans for nutrient analysis data entry. The SFA that conducts nutrient analysis for centralized menus for all schools within the district will establish unique menu names or site names for each age/grade grouping used in the district. The State agency conducting nutrient analysis of a school using a food-based menu planning approach, will establish menu names only for the grade groups for the meal pattern used by the school being reviewed.

SFA Level

The following example demonstrates how an SFA may set up its menus in the nutrient analysis software without having to conduct a nutrient analysis for each school. This example illustrates menus set up by the various age/grade groupings used for the menu planning option.

For Example: In the Springfield City School District, the NSMP approach is used for menu planning, and **three grade groupings** are used throughout the district to plan lunch menus that meet the nutrient standards – preschool, grades K-6 and grades 7-12. Many more choices within the lunch

KEY

When nutrient analyses of menus are conducted—regardless of menu planning approach—a separate nutrient analysis must be completed for each age or grade group used by the SFA/school.

menu are provided to the older students in grades 7-12 in an effort to increase participation.

Because Springfield City School District uses three grade groupings for their central menus, they must create **three different sets of menus** and, therefore, **three different menu names or sites for data entry**. Springfield School District would set up menu names or sites accordingly, so menus could be centrally planned and analyzed for each of these three grade groupings.

- Springfield School District – Preschool Lunch
- Springfield School District – Grades K-6 Lunch
- Springfield School District – Grades 7-12 Lunch

This school district would have *three* lunch menus to analyze. The first two menus might be duplicates of each other except for portion sizes; however, due to the fact that more choices are offered in Grades 7-12, a new 7-12 grade menu with *additional menu choices* and larger portion sizes will need to be entered.

Because the school district also plans central breakfast menus, they would also set up unique breakfast menu names. If the school serves one breakfast menu to all grades, then one breakfast menu name will be established – in this case Springfield District Breakfast Menus – and the one breakfast menu cycle will be planned and analyzed. If the school uses more than one breakfast menu or age/grade grouping, then multiple names or sites will need to be established such as those previously described for the lunch menus.

State Agency Level

During an SMI review of a school using a food-based menu planning approach, the State agency will conduct a nutrient analysis of the school's menus. A separate nutrient analysis must be conducted on menus planned for each meal pattern used in the school.

The school selected for review is representative of how the SFA is implementing the menu-planning approach. Provided that an appropriate meal pattern is used for menu planning in the school, meals served using that meal pattern will be reviewed against the nutrient standards for that meal pattern, regardless of the grade levels in the school. However, the State agency must keep in mind the available modifications to the Traditional Food Based Menu Planning approach as discussed in Chapter 2.

CAUTION: Meals must be reviewed against the nutrient standard for the specified meal pattern, regardless of the grade levels in the school being reviewed.

For example, the State agency has selected a junior high school (Grades 7-9) for review. The school district uses the Traditional meal pattern for Group IV (Grades 4-12) for planning a centralized menu for grades 4-12. Therefore, the menus served in the junior high school would be reviewed against the nutrient standard for Grades 4-12.

KEY: If the SFA is using food-based menu planning, the grade groupings must match the meal pattern(s) or approved modification and cannot be adjusted.

STEP 2: Identify Menu or Meal Types

The type of meal to be planned must be entered because there are specific program requirements for each meal:

- Lunch
- Breakfast

CAUTION: Regulations permit only those SFAs using nutrient-based menu planning approaches and weighted nutrient analysis to combine the breakfast and lunch analyses. Follow the software program instructions on how to combine the nutrient analysis of breakfast and lunch.

KEY

In performing nutrient analysis for schools using food-based menu planning, State agencies will review schools against the nutrient standards for the meal pattern(s) being implemented by the SFA, including the approved modifications to Traditional Food-Based Menu Planning. State agencies may not develop or customize nutrient standards for the particular grades or ages of the school selected for SMI Review.

NOTE

State agencies may not combine breakfast and lunch analyses when evaluating food-based menu planning approaches. When separate analyses are performed, it is easier to identify problems and better focus technical assistance.

STEP 3

Enter Individual Menus

Entering Individual Menu

The initial process in developing menus is to identify the menu items or recipes to be included for each menu. The software program allows the user to search for the recipes or menu items in the database—either by identification code or by name of food or recipe. The identification code is the number assigned to each food or recipe in the database. USDA-approved software systems will also allow the menu planner to enter the name of the food or recipe, and the software will **search** for the foods or recipe.

In the example below, the menu planner enters “Beef Stew” as the menu item and searches the database for the Beef Stew recipe.

The screenshot shows a software window titled 'Menu Cycle #1'. It has a menu bar with 'Close', 'Save', 'Print', 'Duplicate', 'Search', and 'Open'. Below the menu bar is a search area with a text input field containing 'Beef Stew', and buttons for 'Search', 'Select', and 'Cancel'. The main area is a table with columns for 'Recipe Name', quantity, and USDA code. The table lists several recipes, including 'BAKED BEANS', 'BBQ BEEF ON ROLL', 'BEAN SOUP', and 'BEEF TAMALE PIE'. The 'Beef Stew' recipe is highlighted in the table. Below the table is a 'Meal Totals:' section.

Recipe Name	Quantity	USDA Code
BAKED BEANS	1/2 Cup	USDA 1-6
BBQ BEEF ON ROLL	1 Each	USDA F-2
BEAN SOUP	CUP, 8 fl oz.	USDA H-1
BEEF TAMALE PIE	1 Portion	USDA D-15
BEEF STEW	CUP	USDA D-14
BURRITO, BEEF	1 Each	USDA D-12

Cycle Menu (SFA Centralized Menu Analysis Perspective)

A cycle menu is a series of individual menus that are repeated on a periodic basis; they can save the user time in menu planning, data entry, and analysis. Most software programs allow the user to develop and enter cycle menus by means of a series of pre-numbered menus, then allow the user to select and copy these menus to either calendars or cycles.

SFAs may vary in the way they implement cycle menus. Some SFAs may repeat the same set of menus every four weeks or so, but have different sets of cycle menus for fall, winter, and spring. Some SFAs, especially those that do a lot of onsite preparation, may establish a basic number of menus and then vary or switch the scheduling of the individual menus—depending on the day of the week and the amount of pre-preparation required.

KEY

State agencies setting up menus for nutrient analysis for an SMI review will not be concerned with cycle menus but will only be entering the menus for the designated school for the review week.

STEP 4 Assign Dates to Menus and Determine Date Range for Nutrient Analysis

Software programs allow the user to select and copy menus to either calendars or cycles. The user determines the date range for analysis. A week for nutrient analysis purposes is 3-7 consecutive school days. If there are fewer than three consecutive days in a week, the days in that week are combined with the subsequent or previous week for analysis.

STEP 5 Determine Number of Servings and Serving Sizes (Portions) of Menu Items

Only menu/food items offered as part of reimbursable meals are analyzed. If you are conducting a weighted analysis, you must project the number of servings for each menu item based on weighted averages, i.e., give more weight to menu items that students select more often.

SFA Perspective: The SFA that is planning and analyzing centralized menus using weighted nutrient analyses, will need to aggregate or consolidate the number of projected servings for each menu/food item planned for reimbursable meals for each menu for each age/grade grouping used in the district to ensure the analysis is weighted correctly.

Remember, weighted averaging allows for greater contribution from menu items selected more often. If menus have previously been served to students, the number of menu items served is obtained from past food production records.

For a school district just changing over to NSMP with a set of new menus, there may be no food production history from the schools to indicate the more popular choices or items more frequently declined under Offer versus Serve.

The best strategy for this school district is to estimate or forecast the number of servings of each item anticipated being selected for reimbursable meals for all schools. Once the school district/school has experience in serving the menus across the district – usually at the end of the first menu cycle – the SFA will have data from the schools' production records to complete the second step—using production data to adjust the weighted analysis; then the school *must* re-analyze meals based on the actual school district numbers for weighting.

Since only menu/food items offered as part of the reimbursable meal are analyzed, this will require the SFA to combine or aggregate data from all schools. For an accurate weighted analysis where central menus are analyzed for all schools, the following protocols must be followed:

1. The adjusted production data for each menu/food item must be aggregated by each age/grade groupings used by the school district. For example, the ABC School District would aggregate its data by preschool, grades K-6, and grades 7-12.

2. The term “adjusted production data” for each menu/food item means the items served only in reimbursable meals – this will require subtracting the food items sold a la carte, items sold to adults, and leftover items.

State Agency Perspective: If the State agency conducts the nutrient analysis for an SMI review for an SFA using food-based menu planning, it will select one school, request the food production records from the school for the week selected for review, and use the actual number of servings used in reimbursable meals for the weighted analysis. Aggregating data from all schools is not feasible and is not required. However, the State should recognize that using weighted data from only one school might not be reflective of the school district as a whole

KEY

During an SMI review, if the SFA conducted a centralized nutrient analysis, the State agency validates that the district correctly aggregated data for the weighted analysis.

A More Detailed Explanation of Weighted Averaging

In the following example of weighted averaging, there are three entrée choices in the meal. An average of 4,500 students normally receive a reimbursable meal for this age/grade grouping in the school district. A review of past production records of this meal indicates that pizza is more frequently selected and should be weighted accordingly.

Sample Weighted Averaging Of Three Entrée Choices

Weighted Nutrient Analysis of Entrees			
Entree Items	Actual Servings Planned	Data Entry Servings Planned	Contribution to Nutrient Analysis
Pizza	3,000	3,000	66.7%
Baked Chicken	750	750	16.7%
Chef's salad	750	750	16.7%
Total	4,500	4,500	100%

SFAs, which conduct nutrient analysis of *centralized* menus will need to *consolidate* or *aggregate* production data records for all of menu items served in reimbursable meals in all of their schools in order to weight the analysis.

KEY

When the menu planner uses weighted averaging for nutrient analysis, all menu items must be weighted, including milk, condiments, salad dressings, etc.

In weighted averaging, the total number of planned reimbursable meals with projected number of servings for each menu item, excluding food items sold as adult meals and a la carte, is required for each menu.

To conduct weighted nutrient analysis, the menu planner must enter the following items:

- Total number of planned reimbursable meals for each day of the weekly menu by age/grade grouping (Example: PK, K-6, 7-12);
- Portion size(s) for each menu item and condiment for each age/grade grouping; and
- Projected number of servings for each portion size of each menu item that will be part of the day's reimbursable meal, including milk and condiments and excluding a la carte and adult servings.

What is a "Simple Average"?

For nutrient analysis, simple averaging means giving equal weight to every item offered to the student within each menu choice. It is an alternate method for projecting the numbers of each menu or food item, in contrast to weighted averages, which gives more weight to nutrients that are more frequently selected by students

SFA/School Level: Check with your State agency to determine if simple averaging is an option for conducting nutrient analysis.

State agency Level: When the State agency conducts an

SMI review on a district implementing simple averaging, the State must ensure that the district correctly implemented simple averaging.

How to Project the Number of Servings Using Simple Averages

Simple Averaging —No Choices

The complexity of simple averaging depends on the number of choices provided within the menu. If an SFA/school serves menus with no choices, simple averaging can be accomplished by entering “1” as the number of meals and entering each menu item as 1 serving. However, there are usually choices—if nothing more than various types of milk.

Simple Averaging—Choices

In cases where students have the option of selecting more than one item from a group of choices, the menu planner must **choose a number** for the projected number of planned meals that is evenly divisible by the number of menu item selections available within all of the menu choice groupings. Three hundred (300) is a number evenly divisible by any number through six; therefore, 300 will be used for the simple averaging process below.

In this example, a school of 375 participating students, with the same 3 entrée choices, uses simple averaging for nutrient analysis.

Nutritional Analysis Based on Simple Averages			
Entree Items	Actual Servings Planned	Data Entry Servings Planned	Contribution to Nutrient Analysis
Pizza	250	100	33.3%
Baked chicken	75	100	33.3%
Chef's salad	50	100	33.3%
Total	375	300	100.0%

An SFA/school uses this menu structure and conducts nutrient analysis using simple averaging:

4 Entrée choices	Student may select 1
6 Vegetable/Fruit Side choices	Student may select 2
4 Breads/Desserts Side choices	Student may select 2

The menu planner must choose a number that can be evenly divided by the number of choices within all of the menu choice groupings—in this case 4, and 6. Three hundred (300) is a number that is easily divisible by any number less than seven.

CAUTION

In simple averaging, the planned number of meals must be consistent from day to day to ensure equal weight for the week's average.

If a student has the option to select more than one item from a group of menu choices, follow these steps to calculate the planned number of meals that would accomplish simple averaging related to the number of choices.

- Use a number for planned or projected meals that is easily divisible by all the number of menu choices (300).
- Divide this number by the number of selections within the menu choice. Example: If four fruits and vegetables are offered, divide 300 by 4 = 75.
- Multiply this number (75) by the number of menu items the student may select. Example: Student may select 2 fruits and vegetables, multiple 75 by 2 = 150.

KEY

If the menu planner uses simple averaging for nutrient analysis, he/she must also use simple averaging for milk, condiments, salad dressings, etc.

Refer to Appendix J for an example of determining projected servings for simple averaging.

Simple averaging cannot be used if students are allowed a range of selections, such as “Select 2 or more”, because without a specific number of number of choices, the menu planner cannot equally weight the items within the menu choice group.

Portion or Serving Sizes

The portion or serving size must be specified for every food item and menu item. For example:

- 1% low-fat milk, 8 fl. oz.
- Bowl pack of corn flakes cereal, 1 oz.

Menus for Field Trips (NSMP/ANSMP)

Packed lunches for field trips present a unique problem for averaging into the week's regularly scheduled menu analysis as if they were meals served on a school campus. First, field trips are special events with only a relatively small number of students participating on any given day, and the nutrients for those meals might get "lost" in weighted averaging. Another problem is that many schools are not notified about field trips more than 2 weeks in advance of the trip.

To help ensure that field trip meals are as nutritious as the other meals offered by the foodservice, the meal planner can create a separate menu(s) for field trips, analyze and compare to the appropriate age/grade group nutrient standard, and then adjust to provide a packed lunch that comes as close to the nutrient standard as possible. Then the school foodservice could be assured that field trip meals would not get lost in the larger numbers. The meals would be nutritious, but would have little, if any, impact on the overall nutrient analysis.

STEP 6 Print Applicable Reports for Review

- Day by Day Analysis
- Weekly Analysis

The nutrient analysis software programs allow the user to print various reports as needed to check data entry. These include a menu spreadsheet indicating weekly analysis. These reports can be reviewed to identify missing data and/or errors in data entry.

Common Errors in Data Entry of Menus

- Incorrect food item/recipe selected from database
- Portion or serving sizes wrong
- Numbers for aggregation of planned production data for weighted averaging are incorrect
- Simple averaging not done correctly
- Condiments are not entered as menu items, e.g., mayonnaise, mustard and/or catsup for hamburgers
- Menu item left off of the nutrient analysis, e.g., bun for hamburger

Reminders:

- Carefully select the correct food item/recipe from the database. Make sure that all recipes reflect the currently purchased food items.
- Choose the correct portion size.
- Make sure the numbers for planned production for weighted averaging have been done correctly.
- Review data entry to check for all menu items and condiments before saving menu.

Chapter 9

Evaluating and Modifying Menus and Recipes to Achieve the Nutrient Standards

CHAPTER OBJECTIVES

After reading this chapter, you will understand how to:

- Evaluate how well current menus meet appropriate nutrient standards.
- Evaluate the menus for variety
- Modify the menus to meet the nutrient standards
- Include substitutions in the analysis.
- Decide when to adjust future menus.

Evaluate menus

The final process of nutrient analysis is to evaluate the menus and modify accordingly to meet the nutrient standards.

Review printed daily and weekly nutrient analyses.

1. Review the menus for variety

- Are a variety of meat/meat alternates (including non-processed varieties), offered?
- When choices are not offered, are higher fat entrée items limited to once a week?
- Are a variety of fruits, and vegetables offered daily, especially fresh fruits and vegetables?
- Are grains, including frequent servings of whole grains, offered daily?

2. Evaluate how well the current menus meet the appropriate nutrient standards.

- How do the menus compare to the nutrient standard for the age/grade group(s)? What areas need changes? Which areas are okay?
- Do the menus have sufficient calories, when averaged over the week and on a *daily* basis? Compare each day – look for daily menus that are out of line with the others.
 - If menus are insufficient in calories, can additional menu items be added or portion sizes increased?
- Are the menus too high in total fat and/or saturated fat? If so, evaluate menus for appropriate changes.
 - Review recipes for adjustments in fat and saturated fat levels. Could a lower fat ingredient be exchanged for a higher fat ingredient?

- Can a popular high fat item be served less frequently in a menu cycle or school week?
 - Can the total number of low-fat or low unsaturated fat food or menu items be increased?
 - Can the quantity of a high fat ingredient in a recipe be reduced or changed to a lower fat ingredient?
 - Is a low fat or nonfat fluid milk offered each day?
- Are the menus low in calcium, iron, vitamin A, or vitamin C?
 - Are more high vitamin A or high vitamin C foods needed? Are fruit and/or vegetables included in each breakfast and/or lunch menu?
 - Evaluate menus for sodium, cholesterol, and fiber.
 - Compare with the last nutrient analysis to see if improvements are being made.
 - If applicable, compare with the State agency or national guidelines.
 - Are too many high sodium items, such as processed foods, offered frequently?

3. Review the portion or serving sizes

After making adjustments to how often foods are served, recheck the nutrient analyses. If there are still discrepancies, look at the **portion size** of problem foods next.

- Can a smaller serving of popular high fat, saturated fat foods, or foods high in sodium be offered?
- Can the portion size of a low-fat, nutrient dense food such as fruits, vegetables, and whole grains be increased to meet the nutrient standards?

KEY

As the percent of calories from fat is lowered, *maintenance of calories* probably becomes the most important nutrient standard. Menu planners need to ensure adequate, consistent calorie levels to meet children's energy and growth needs by keeping daily calories close to the standard. Serving too much food and too many calories one day and too little food and too few calories on another day may average out, but a real disservice is done to students whose energy and growth needs cannot be met on days when too few calories are offered.

Using the Nutrient Food Source List

If the nutrient standards have still not been met, search the **Nutrient Food Source List** in the software program to find ideas for menu modification.

This list suggests foods that might be added or substituted in menus in order to increase the amount of a particular nutrient found to be below the nutrient standard in the week's breakfasts or lunches. For example, if your weekly menu is still high in fat and low in iron, a database search may be conducted for a list of vegetables that contain less than 3 grams of fat and also at least two milligrams of iron.

When replacing a food, be sure that the levels of the other nutrients in the menu are maintained. After deciding which foods to change and/or which foods to add to the menu, nutrient values need to be recalculated and compared to the nutrient standards.

Reprint Appropriate Reports for Re-analysis

After modifications have been made, print out the appropriate reports to review the new nutrient analyses. If nutrient targets have still not been met, continue the process described above until the nutrient standards have been met.

Re-analysis of Menus for Substitutions for NSMP and ANSMP

Substitutions

Occasionally it may be necessary to make a substitution to a planned menu due to various reasons such as food shortage, improper delivery from vendors, or effective use of leftovers. This is a concern because:

- Substitutions *change* the nutrient content; and
- Meals *may or may not* continue to meet the nutrient standard(s).

When food substitutions are made due to an emergency situation (e.g., food shortage), it may be impractical for menu planners to revise menus and recalculate nutrient amounts, especially if the emergency arises just prior to the menu being prepared. For this reason, USDA regulations require a school district or school on NSMP to reanalyze **if the substitution is known prior to two weeks before the menu is served**. If the SFA is on one of the food-based menu planning systems but conducts its own nutrient analysis **and** wants the State agency to accept the SFA's nutrient analysis for the SMI review, it too must follow the two-week window guideline.

Two-Week Window

If the need to serve a substitute item or leftovers occurs prior to a two-week “window” before the day the original menu item is to be served, the week’s menus *must* be re-analyzed to determine if the nutrient standards will be met with the substituted item, or if other changes will be needed to meet the nutrient standards.

When using NSMP or ANSMP to plan reimbursable meals, SFAs are expected to make substitutions only due to unforeseen circumstances. Remember, reimbursable meals are based on the ability to meet the nutrient standard(s). Some examples include:

- Food shortage (food not delivered);
- Improper delivery (incorrect product delivered),
- Crop failure (food unavailable);
- Significant cost increase in food items; and
- Effective use of leftovers (see discussion on page 106 of this chapter).

KEY

The two-week “window” is the two-week period before the day of the menu item substitution. Example: Creamed corn is planned for the menu to be served on Wednesday, November 19. The two-week window for this menu will begin on Wednesday, November 5.

The two-week window is defined as when the *menu planner* becomes aware of the need to make a substitution. For example, the two-week window is from the date the SFA is made aware by a vendor that a food item will not be delivered to schools. If a food item is shorted upon delivery to a school, without notifying the central office, the two-week window occurs whenever the school learns of failure to deliver. It is recommended that SFA staff include “immediate notification of inability to deliver” in the general conditions of the food bid.

Re-analysis Protocols:

- If the need for a substitution is known more than two weeks before the menu date, or **outside the two-week window**:
 - Re-analyze; and
 - Meet the nutrient standards
- If the need for a substitution occurs **within the two-week window**:
 - No re-analysis is required; and
 - Substitute with a similar food.

KEY

If a food is substituted that is not a similar food— even within the two-week window—a re-analysis should be done.

Similar Foods for Substitution Within the Two-Week Window

For the purposes of NSMP, a similar food will mean that the substitution meets both the following criteria:

- Plays the same role in the meal, for example:
 - Entree
 - Other menu items (side dishes)**and**
- Is from the same food group (breads, fruits, vegetables, etc). Every effort should be made to substitute a like food within a food group, i.e., a citrus fruit for a citrus fruit, a leafy green vegetable for a leafy green vegetable, etc.

Menu planners are encouraged to monitor substitutions and re-analyze the menu if, in their judgment, the nutrient standards would no longer be met. If the standards are not being met, additional training with staff should be done to reduce substitutions.

All USDA-approved software has a nutrient food source search capability that can be used to search for foods with comparable nutritional contributions. For example, if there is a need to substitute a food for one that served as a high source of vitamin C, with fat limitations, the user can search for a new food with specified milligrams of vitamin C, and less than specified grams of fat.

KEY

It is recommended for SFAs on NSMP/ANSMP, that training be conducted to stress the importance of not substituting unless an emergency arises. Many SFAs require prior approval from the central office before a school can make a substitution.

Theme Bar Substitutions

When substitutions occur on a theme bar, the same rules apply as for a regular lunch, that is, the two-week window applies to substitutions of food items on a theme bar. If knowledge of the need for a substitution occurs prior to two weeks before the service of the menu, the recipe must be modified to reflect the substituted ingredient and the modified recipe used in the menu analysis. If the need for a substitution occurs within the two-week window prior to the meal service, no re-analysis is required; but the substituted item should be similar to the planned item.

Documentation of Substitutions

SFAs must document the date the need for the substitution was known and what was substituted, so State agencies may determine during an SMI review, if the SFA followed the requirements for re-analysis based on the two-week window. Some SFAs work out a system for having schools document substitutions directly on the printed menus. SFAs may also want to consider development of a substitution form for documenting substitutions or using the sample substitution form included in Appendix L.

The substitution list should be maintained at the school level(s) and at the central office. The central office would record instances where notification was received from the supplier that the food product would not be delivered to the schools.

Leftovers

Leftovers also can change the nutrient content so that meals may no longer meet the nutrient standards if there are frequent leftovers that are offered in subsequent menus. Menu planners are reminded that NSLP regulations require schools to consider participation trends in order to *provide one reimbursable lunch* for each child each day. Every effort should be made to reduce the amount and frequency of leftovers. A challenge for schools is to make effective use of leftovers while maintaining the integrity of the nutrient analysis.

Suggestions for Leftovers:

If the quality can be maintained, leftovers may be frozen and used when the menu item is *on the planned menu again*. If not, the leftovers may need to be served within the school week by substituting for another menu item or may be used as a substitute at a later date. The same two-week window rules apply to leftovers as apply to substitutions.

Schools are cautioned that any leftover not frozen for reuse should be discarded or used within a safe period. Bacteria continue to grow even under refrigeration.

Documentation of Leftovers

A simple way to document leftovers is to indicate the leftovers directly on the menu production record or on a special form such as the substitution form. Documentation should include amount of leftover(s) such as number of servings, numbers of pans, etc.; how leftover was dispensed (frozen for later use, thrown away, served next day, etc.).

Adjusting Future Menus

The menus have now been planned, evaluated and modified as needed. Before the menu is used again, SFAs using NSMP and ANSMP may need to re-analyze/re-adjust the menus for weighted analysis if there are significant changes in participation or projected production. The actual participation and the actual number of menu items served in reimbursable meals (recorded on the production record, with a la carte and adult meals subtracted) should be compared to the numbers planned. If the differences are such that production numbers need to be adjusted, then the menu should be re-analyzed using the new numbers.

Additionally, menus need re-analyzing whenever:

- Menu/food items change;
- Food products change, including commercially prepared products;
- Recipes change; or
- There is any change that will affect the nutrient content of the meals, such as a change in foods selected, which changes the weighting.

SFA TIP

At a minimum, your schools' food production records should be aggregated at least twice a year to see if the weighting is still reflective of what's actually being selected.

Getting Help

Any questions that may arise about food items, recipe analysis, and/or menu analysis that have not been addressed in this manual should be communicated to your State agency.



Appendices



APPENDIX A National Reference Levels for Sodium, Cholesterol, Carbohydrate, and Dietary Fiber

	National Research Council <i>Diet and Health</i> Recommendations (1989)	American Health Foundation (renamed, Institute for Cancer Prevention)	Nutrition Facts Label (FDA)	American Heart Association
Sodium	2400 mg/day or 800 mg/lunch, 600 mg/breakfast	—	2400 mg /day or 800 mg /lunch, 600 mg/breakfast	2400mg /day or 800 mg /lunch, 600 mg/breakfast
Fiber	—	Age + 5 g dietary fiber (For children 2-20 years of age)	25 g fiber/day for 2000 calories a day or 30 g fiber for 2500 calories a day (adults)	—
Cholesterol	< 300 mg/day	—	< 300 mg /day	< 300 mg /day
Carbohydrate	Breakfast and Lunch > 55% of total calories	—	Breakfast and lunch % daily value (DV) 60% of total calories	—

Note: While these national organizations and Federal agencies have developed recommended levels for these dietary components for adults, there is no consensus among the scientific community for their consumption for children, especially sodium.

APPENDIX B

Age to Grade Comparison Chart

Age	Grade
5	K
6	1
7	2
8	3
9	4
10	5
11	6
12	7
13	8
14	9
15	10
16	11
17	12

APPENDIX C

Foods of Minimal Nutritional Value

Competitive Foods

Competitive foods means any foods sold in competition with the Program to children in food service areas during the lunch periods.

Foods of Minimal Nutritional Value (FMNV)

A Food of Minimal Nutritional Value means:

1. In the case of artificially sweetened foods, a food which provides less than five percent of the Reference Daily Intakes (RDI) for each of eight specified nutrients per serving and is included in one of the Categories of Foods of Minimal Nutritional Value (FMNV) listed in Appendix B to 7 CFR Part 210. Those categories include (1) soda water, (2) water ices, (3) chewing gum, and (4) certain candies, including (i) hard candies, (ii) jellies and gums, (iii) marshmallow candies, (iv) fondant, (v) licorice, (vi) spun candy, and (vii) candy-coated popcorn.
2. In the case of all other foods, a food which provides less than five percent of the RDI for each of eight specified nutrients per 100 calories and less than five percent of the RDI for each of eight specified nutrients per serving and is included in one of the Categories of FMNV listed in Appendix B to 7 CFR Part 210 (see categories above).
3. The eight nutrients to be assessed for FMNV include (a) protein, (b) vitamin A, (c) vitamin C, (d) niacin, (e) riboflavin, (f) thiamin, (g) calcium, and (h) iron.
4. All foods falling into one of the Categories of FMNV in Appendix B to 7 CFR Part 210 are considered to be FMNV unless the Food and Nutrition Service has been petitioned and has granted an exemption for the particular food. Any person may submit a petition to the Food and Nutrition Service requesting that an individual food be exempted from a category of Foods of Minimal Nutritional Value. In determining whether an individual food is a FMNV, discrete nutrients added to the food will not be taken into account. Procedures for applying for an exemption are provided in Appendix B to 7 CFR Part 210. Interested persons may contact the Nutrition and Technical Services Division of the Food and Nutrition Service at (703) 305-2556 for additional information.

General Information

State agencies and school food authorities shall establish such rules or regulations as are necessary to control the sale of foods in competition with lunches served under the Program. Such rules or regulations shall prohibit the sale of FMNV in the food service areas during the lunch periods. The sale of other competitive foods may, at the discretion of the state agency and school food authority, be allowed in the food service area during the lunch period only if all income from the sale of such foods accrues to the benefit of the nonprofit school food service or the school or student organizations approved by the school. State agencies and school food authorities may impose additional restrictions on the sale of and income from all foods sold at any time throughout schools participating in the Program.

APPENDIX D

USDA-Approved Nutrient Analysis Software Requirements

Description of Software Requirements and Functions

- Nutrient Standard Menu Planning software, which meets the specifications for use in the Child Nutrition Program, must comply with the following criteria:
- All of the appropriate files and fields from the Child Nutrition (CN) Database must be incorporated into the software (standard reference foods, USDA standardized recipe food items, commodity foods, manufacturer's foods, weights and measures, and the *USDA Food Buying Guide*).
- Users cannot alter information provided by the CN Database; however, user-entered information can be edited or deleted.
- The user will be able to enter new food items into a local database from information provided in a manufacturer's fact sheet or food label in nutrients per serving or specific weight, or percent of the Daily Reference Value (DRV).
- The software will automatically convert measures for weight and volume (if available) at all levels of item entry, recipe development, and menu planning.
- The user will be able to enter recipes; the software will produce a recipe report that includes the recipe code number, recipe name, serving/portion size, yield of the recipe based on number of servings, ingredients, the amount of each ingredient in units appropriate for food service, preparation instructions, and nutrient value of the recipe per serving or per 100 g (with nutrient changes calculated due to moisture/fat factors).
- The Recipe Nutrient Composition Report will contain the nutrient value contributed by each ingredient and the total nutrient value of the recipe per serving or per 100 g. The yield of the recipe will be able to be accurately adjusted to meet the needs of the food service without degrading the base recipe.
- A Recipe/Ingredient Cross Reference report will identify recipes that contain a certain food ingredient.
- Menus for a specific site can be developed and copied to another site or data range and the serving sizes adjusted for various age groups.
- Menu Reports will be available in both calendar and report formats.
- A Menu Production Record can be printed for use by foodservice workers to determine the quantities and serving sizes of food to prepare for a specific site.

- The Standard and Modified RDA data sets provided USDA are incorporated into the software and used for comparison in nutrient analyses. A new nutrient standard (e.g., age 5-11) can be created, simply by entering the age or age range of the new grouping.
- A Weighted Nutrient Analysis of an individual menu or range of menu dates can be provided. A summary of the calculated nutrient value of the menu is then compared to the nutrient standards of a selected age group and deficiencies highlighted.
- The software will search the database for food items containing specific nutrients, so that menus can be adjusted to meet the nutrient standards.
- The nutrient composition of all food items and recipes in the databases (CN Database and local database) can be printed, including all nutrients/components (calories, protein, carbohydrate, fat, saturated fat, Vitamin A, Vitamin C, iron, calcium, cholesterol, sodium, dietary fiber, and the percentage of calories from protein, carbohydrate, fat, and saturated fat).
- Training Documents and the User's Manual must be presented in a complete, sequential, easy-to-understand format. The developer must have a system to update the database whenever a new release of the CN Database is available.

APPENDIX E

Sample of a Nutrition Facts Label

Nutrition Facts			
Serving Size 1 cup (228g)			
Servings Per Container 2			
Amount Per Serving			
Calories 250		Calories from Fat 120	
		% Daily Value*	
Total Fat 13g		20%	
Saturated Fat 5g		25%	
Trans Fat 2g			
Cholesterol 30mg		10%	
Sodium 660mg		28%	
Total Carbohydrate 31g		10%	
Dietary Fiber 0g		0%	
Sugars 5g			
Protein 5g			
Vitamin A 4%		Vitamin C 2%	
Calcium 15%		Iron 4%	
* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.			
	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g
Calories per gram			
Fat 9	*	Carbohydrate 4	* Protein 4

For more information on the Nutrition Facts Label visit the FDA Web site at <http://www.cfsan.fda.gov/~dms/foodlab.html>

APPENDIX F

Manufacturers' Data Submission Form

For directions on how to fill out this form, see reverse side.

1. Product Identification

PRODUCT NAME: _____

Brand _____

Product code _____

List CN Label number if appropriate _____

Is this product in the Child Nutrition (CN) Database? ☐ Yes ☐ No

2. Package Size and Servings Per Package

Package Size = ____ grams ____ lbs. ____ fl. oz.

Standard Serving Size = _____

Number of Servings Per Package = _____

3. Basis for Nutrient Data

Nutrient data is being given: (Check one) ☐ As Served ☐ As Purchased

Analysis is based on: (Check one) ☐ Per Serving ☐ 100 grams

Weight per serving = _____ grams

4. Individual Values of Nutrients and Dietary Components

If you do not have information on a nutrient, write "M" or "missing." If this product does not contain a particular nutrient, write "0."

Calories	____ kcal	Protein	____ grams
Total fat	____ grams	Saturated fat	____ grams
Carbohydrates	____ grams	Sodium	____ milligrams
Total dietary fiber	____ grams	Cholesterol	____ milligrams

Calcium

____ milligrams	-or-	____% DV (Daily Value)
-----------------	------	------------------------

Iron

____ milligrams	-or-	____% DV
-----------------	------	----------

Vitamin C

____ milligrams	-or-	____% DV
-----------------	------	----------

Vitamin A

____ IU	-or-	____RE	-or-	____% of DV
---------	------	--------	------	-------------

IU = International Units, RE = Retinol Equivalents

5. Fat and Moisture Gain/Loss

When this product is prepared, there is a:

Fat change (+/-) ____% Moisture change (+/-) ____%

6. Special Instructions for Preparation (if appropriate)

To prepare this product, the manufacturer recommends: _____

How To Fill Out This Form

USDA has developed this standardized form to help schools obtain information on foods they will be serving to children. They will use this information to develop recipes, analyze menus for nutritional value, and prepare products for lunch or breakfast.

- 1. Product Identification:** List name of product (and brand, if appropriate). Also list product code if possible. If you know the product has a CN Label number, list that as well. Check yes or no for CN Database.
- 2. Package Size and Servings Per Package:** Write in package size as appropriate in grams, pounds, or fluid ounces. Indicate standard serving size and number of servings per package.
- 3. Basis for Nutrient Data:** Indicate with a check mark whether you are submitting nutrient data for this product on an “As Served” or “As Purchased” basis. Use the “As Served” basis for any food that does not have: (1) any ingredients added in preparation or (2) any fat absorbed during preparation.

Use the “As Purchased” basis for any food that: (1) has ingredients added in preparation (such as milk, eggs, and oil added to baked product mixes); (2) is prepared by frying; (3) can be prepared in varying ways (for example, a food that can be baked or fried); or (4) gains or loses moisture/fat during preparation.

In addition, indicate whether nutrient analysis is based on 100 grams or per serving. Also indicate weight per serving.

- 4. Individual Values of Nutrients and Dietary Components:** Please fill out completely, leaving no lines blank. (1) If you have information on a nutrient, write the specific value in the unit of measurement indicated. (2) If you do not have information on a nutrient, write “M” or “missing.” (3) If this product does not contain a particular nutrient, write “0.”
- 5. Fat and Moisture Gain/Loss:** If you checked “As Purchased” above, also fill in this section if there is a fat or moisture change during preparation.

(Fat may be gained or lost in cooking some foods, thereby changing the foods’ nutrient value. Methods of preparation such as breading, frying, or baking affect this fat gain or loss. For example, chicken baked in the oven will lose fat during cooking, while batter-coated or breaded chicken that is deep fried will gain fat. If fat is absorbed or gained, fat grams and calories from fat will be increased. If fat is lost, fat grams and calories from fat will be decreased.)

- 6. Instructions for Preparation:** If appropriate, indicate instructions such as: ingredients to be added, cooking methods, cooking time, and cooking temperature.

APPENDIX G**Raw-To-Cooked Conversion Factor for
Selected Vegetables**

Food Item (Raw, Ready-To-Cook)	Yield (cooked)
Apples, cored, cut or whole	.85
Asparagus, trimmed	.94
Beets, pared	.94
Cabbage, Green, cored	.94
Carrots, sliced	.91
Cauliflower, stemmed	.98
Celery, trimmed	.89
Chayote (Mirliton), pitted, sliced	.91
Jicama (Yam Bean), peeled, julienned	.97
Malanga (Taro), peeled, diced	1.20
Onions, peeled, cut	.88
Pepper, Bell, stemmed, seeded, cut	.91
Potato, pared	.91
Squash, Yellow, trimmed, sliced	.87
Tomatillo, stemmed, diced	.83
Turnips, pared, cubed	.93
Yautia (Tannier), peeled, diced	1.00
Zucchini, trimmed, cubed	.90

APPENDIX H

Common Moisture and Fat Change Values (%) for Purchased Prepared Foods that are Fried

Food Item	Moisture Change %	Fat Change %
Burrito	-11%	+9.5%
Chicken, Nuggets, or Patties, breaded or battered, pre-fried, frozen	-10%	+4%
Corn Dogs, pre-fried, frozen	-8%	+2.5%
Fish Nuggets, portions, Sticks, breaded or battered, oil-blanchd, frozen	-10%	+4%
Funnel Cake, from mix	-31%	+10%
Hush Puppies, pre-fried, oil-blanchd, frozen	-8%	+2.5%
Potatoes, French-fried, oil-blanchd, frozen	-27.5%	+3.5%
Potatoes, Chopped, and Formed, Rounds and Nuggets, oil-blanchd, frozen	-5%	+3.5%
Steak, Chicken Fried, pre-fried, frozen	-10%	+2.5%
Taco Shell, Flour, for Taco Salad	-22%	+19%
Vegetables, battered or breaded (eggplant, okra, squash, etc.)	-20%	+8%

APPENDIX I

Example of Determining Projected Servings Using Weighted Averaging

Projected reimbursable meals: 3,750 based on aggregated past food production records.

	Menu	Projected Servings for Computer Entry	Steps Necessary to Get Final Projected Servings for Computer Entry
Choose One	Chicken Nuggets Spaghetti with Meat Sauce	1750 2000	Numbers based on past food production records of items served in reimbursable meals*
Choose Two	Baked Potato Wedges Seasoned Green Beans Steamed Corn Tossed Salad with Dressing Fresh Fruit Cup	500 1000 1200 1200 500	*
Choose Two	Dinner Roll Corn Muffin Sugar Cookie Sherbet	1000 500 1500 1500	*
Choose One	Whole milk, 3.25% 1% Chocolate Milk Skim Milk 1% Low Fat Milk	250 2000 250 750	*

APPENDIX J

Example of Determining Projected Servings Using Simple Averaging

Projected Reimbursable Meals: 300

(Evenly divisible by number of selections within each grouping)

	Menu	Projected Servings for Computer Entry	Steps Necessary to Get Final Projected Servings for Computer Entry
Choose One	Chicken Nuggets Spaghetti with Meat Sauce	150 150	300 projected meals and 2 selections = 150 servings for each menu choice 150 X 1 choice = 150 servings
Choose Two	Baked Potato Wedges Seasoned Green Beans Steamed Corn Tossed Salad with Dressing Fresh Fruit Cup	120 120 120 120 120	300 projected meals and 5 selections = 60 servings for each choice. 60 X 2 choices = 120 servings
Choose Two	Dinner Roll Corn Muffin Sugar Cookie Sherbet	150 150 150 150	300 projected meals and 2 selections = 75 servings for each menu choice 75 X 2 selections = 150 servings
Choose One	Whole milk, 3.25% 1% Chocolate Milk Skim Milk 1% Low Fat Milk	75 75 75 75	300 projected meals and 4 selections = 75 projected servings for each menu choice 75 X 1 choice = 75 servings

APPENDIX K

Comparison Between Weighted Averages and Simple Averages

Factors to Consider	Weighted Averaging	Simple Averaging
Each food or menu item offered as part of the reimbursable meal is weighted, based on frequency of selection	•	
Each food or menu item offered is given equal weight, within a menu choice, for the meal.		•
If menus are planned and analyzed on a SFA basis (central menus), accurate aggregate food production data from all schools, based on past experience and knowledge, is used. This includes number of each food/ menu item served as part of a reimbursable meal, aggregated by age/grade groupings, minus a la carte and adult meals.	•	
Use of standardized recipes required.	•	•
Food production records for each day reimbursable meals are claimed must be maintained. These must include number of reimbursable meals planned and served; all menu or food items planned for reimbursable meals; portion sizes for each age/grade group; recipes used; product identification numbers; total amounts of food planned and served; documentation of a la carte sales (for weighted analysis only), adult and other non-reimbursable meals; and documentation of substitutions and leftovers.	•	•
A separate nutrient analysis for each age/grade grouping is required when different portion sizes are served these age/grade groupings.	•	•
Breakfast and lunch analysis may be combined.	•	
Under NSMP, may allow students to choose a minimum number of side dishes but still allow choice of more; e.g., 2 or more choices.	•	
Recipes for milk, juice, cereal, salad dressings, etc., are weighted for nutrient analysis.	•	
Condiments such as mustard, mayonnaise, and salad dressings are included in the nutrient analysis, equal weight being given to items.		•

APPENDIX L

Menu Substitution/Leftover Form

Menu Substitution/Leftover Form				
Date When Need for Substitution/ Leftover is Known	Food or Menu Item	Substitution or Leftover	Approved By	Date of Substitution/ Leftover



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